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THE WET NURSE IN HOSPITAL PRACTICE*

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The high death-rate during the first year of human life is a phenomenon now attracting the attention of all civilized peoples. It is a condition peculiar to no one nationality, city or community, but prevails everywhere the world over. Broadly speaking, this mortality is due to ignorance and poverty. Hence most of these deaths occur in the homes of the poor and ignorant, both in cities and rural districts. A large proportion, however, is contributed by infant asylums, institutions and hospitals. It is with the high death-rate in the last named institution—babies' hospitals—together with measures taken to combat it, that this paper deals.

It is somewhat startling to note the high death-rate which prevails in even our best infant hospitals. It ranges from 30 to 40 per cent. in different institutions in different years. The reason is not far to seek; the babies are brought to the hospital invariably in a state of chronic malnutrition, often suffering from some acute disease. Their resisting power is low. Their progress is slow, necessitating a long stay in the hospital, thereby exposing them to the danger of communicable disease, of the respiratory tract in winter, and of the intestinal tract in summer. All of these factors result in a high death-rate.

Modern methods of substitute feeding, so successful in private practice, are not attended with the same beneficial results when applied in hospital practice. One baby dying out of every three admitted is hardly a satisfactory record. It is undoubtedly this unsatisfactory result with substitute feeding which is giving rise to the tendency to revert to the more widespread use of human milk in the management of these hospital cases. The superiority of breast milk to all other foods for babies in health is universally acknowledged. It would seem as if its use among sick babies also ought to be attended with results better than those attained by any other food. In accordance with this view the staff of the Children's Memorial Hospital have, for a period of five years, resorted to the use of human milk in their management of the hospital infants. During the first two years of this period, 1909-1910, breast milk was used irregularly; during the last three years, 1911, 1912 and 1913, more regularly and constantly.

* Chairman's address, read before the Section on Diseases of Children at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

It is to a discussion of the methods used and the results there obtained that I now invite attention.

METHODS AT CHILDREN'S MEMORIAL HOSPITAL

We have kept on hand two or three wet-nurses at a time. They come from the Salvation Army headquarters. Each nurse brings her own baby; both mother and baby are examined before engagement, the examination of the mother including a Wassermann test. The nurse is paid $30 per month, room and board, and in addition to her duties as foster mother, does general work about the hospital.

The mother nurses her own baby every four hours, usually on one breast. The other breast is pumped the alternate four hours, the mammae thus being stimulated to activity every two hours. The milk is fed by bottle to the ward babies, none of the latter being put to the breast for fear of infecting the woman, for example, with a latent syphilis. This method has the further advantage of allowing us to feed definite amounts of breast milk to a given baby. Except for the prematures, few of the babies receive exclusively breast milk, but are on "mixed" feeding—part human milk, part bovine milk. The feedings of the latter are gradually increased as the infant improves preparatory to sending it home on a simple milk formula. As a rule the milk from all nurses is mixed and fed thus to the ward babies; in some cases, however, babies with a particularly weak digestion receive the milk from a single nurse, which milk analysis has shown to be a "poor" milk; or such a baby is given the "foremilk." In several instances one of these proceedings has seemed to improve a faulty digestion.

The amount of breast milk furnished by each nurse of course varies in the different women. During the first few days they each average 8 to 10 ounces daily in addition to that given their own babies. This increases quite rapidly under the use of proper hygiene and the two hourly stimulation of the breasts, until the maximum is reached, this maximum ranging from 16 to 60 ounces per day. We do not consider a wet-nurse a good one unless she furnishes at least a pint of milk daily for the ward babies.

The average "life" of a wet-nurse has been nine to ten months; the maximum has been thirteen months. They come to us when their own babies are about a month old.

It is evident that, by the method thus briefly outlined, many babies can receive a certain amount of breast milk daily, especially as most of these infants, below par, with a correspondingly weak digestive capacity, can take only small amounts at a feeding. We averaged, for example, during the year 1913, 58 ounces of breast milk per day; with feedings averaging in amounts 2 to 3 ounces, twenty to thirty feed-

ings of breast milk are available, enabling us to give three to four feedings to each one of eight or ten babies daily.

RESULTS

What results have been obtained by this method of treatment of our hospital infants? Have those fed on breast milk done better than those fed on some modification of cow's milk? Has the infant mortality of the hospital decreased since the systematic use of breast milk was begun? To determine these points, I have studied the records of a large number of babies treated at the hospital during the last three years. The records have been divided into two parts, the first consisting of all babies fed on breast milk either exclusively or in combination with some modification of cow's milk; the second, of all babies fed on some modification of cow's milk alone.

The total number of cases studied is 715, of which 165 fall into the breast-fed and 550 into the cow's milk group. They range in age from 1 day to 1 year, in weight from 5 to 20 pounds. They include the types of cases usually seen in an infants' hospital, of varying degrees of severity, from mild cases of disturbed feeding to severe types of ileocolitis and severe degrees of "intoxication." The mortality among the 715 cases as a whole is 36.7 per cent.; among the breast-fed babies, Group 1, it is 36.3 per cent., among the cow's milk fed babies, Group 2, it is 36.9 per cent. Thus the mortality in both groups is practically the same.

MORTALITY IN GROUPS 1 AND 2

All members of Group 1 received as part of their diet a food universally acknowledged to be the best for infants. The members of Group 2, on the contrary, received no such food and were, to this extent, handicapped in the race for life. Yet even with this handicap in a matter of such vital importance, the group loses no more cases in proportion than does Group 1. What is the reason? Obviously the members of the second group must possess some advantage of their own to offset that enjoyed by Group 1 in the matter of diet. This advantage must consist either in some superiority of general management or in some condition of physique indicative of greater vigor and vitality.

The general management was the same in both groups: the cow's milk group did not enjoy the advantage, for example, of living in private homes. All the members of both groups lived (or died) in the same hospital, attended by the same physicians and nurses, exposed to the same atmosphere, to the same communicable diseases; in all respects the general environment was the same for both groups. Any advantage enjoyed by Group 2 could not, therefore, consist in its management. It must consist rather in some physical condition of members of the group, by virtue of which they possessed greater resisting power to disease.

The best index to the vigor and resisting power of an infant is his weight at a given age. In order to compare the vigor and physical condition of the two groups, therefore, the average weight and age on admission were determined, with the following results:

Average weight of 165 infants in Group 1 was 7.6 pounds
Average weight of 503 infants in Group 2 was 9.3 pounds
Average age of 165 infants in Group 1 was 3.8 months
Average age of 503 infants in Group 2 was 5.3 months

Thus it appears that the members of Group 2 were, on an average, 1¾ pounds heavier and 1½ months older, than those of Group 1; and in this superiority of weight and age lies the advantage possessed by the former group, and the explanation of its relatively low mortality.

We are discussing, however, not primarily the effect of physique and natural vigor on infant mortality, but the effect of one kind of feeding on this mortality as compared with another kind.

Obviously the comparative value of two methods of feeding cannot be gauged by applying these two methods to groups of infants with different degrees of vigor. Such values can be determined only by carrying out the two methods on groups of infants of equal vigor and living under the same conditions of general hygiene. In order to do this in the present study, the following plan was pursued.

It was observed that the weight of the great majority of the infants in Group 1 fell within the limits of 6 and 9 pounds. From Group 2 were now selected all the cases ranging in weight between 6 and 9 pounds, and the average weight determined. They constitute Group 2a. They numbered 234, of whom 131 recovered and 103 died. They averaged in weight 7.7 pounds, in age 3.9 months, the averages, it will be noted, of Group 1. To test the relative influence of breast milk and cow's milk in their effect on mortality, we now compared the death-rate of Group 1 with the death-rate of Group 2a, both groups consisting of babies approximately equal in vigor and resisting power but receiving different foods. The mortality rate of Group 2a was determined and found to be 44 per cent.[1] as compared with 36 per cent. in Group 1.

Thus of two groups of infants equal in weight and age, living under identically the same hygienic conditions, the one group receiving *some* breast milk, the second group *none*, a larger proportion of those receiving breast milk survive. It seems reasonable to attribute the lower mortality of this group to the breast milk received.

But while these figures are in favor of breast milk, as was to be expected, the difference is by no means striking, only 8 per cent., and the mortality of the favored group still remains high. There are two possible explanations for this continued high death-rate: the desperate nature of the cases involved; indiscriminate use of a limited supply of breast milk.

The serious condition of hospital infants on admission has already been mentioned. Many come in practically moribund, improve under no treatment at present known to us, sink steadily and die. Such are many of the cases of "intoxication" with or without some complication, for example, bronchopneumonia. The manipulation of proteins yesterday, of fats to-day, of sugar and salts to-morrow, does not save these babies. At present they are out of our reach. We have much yet to learn as to their proper management. To some of these we have fed breast milk whole, skimmed, diluted; to some, modified cow's milk, using the term "modified" in its proper comprehensive sense to include any modification or manipulation of cow's milk, whether it be a simple dilution of whole milk, or the complicated *"Eiweissmilch"* with or without the addition of maltose. It is not at all improbable that breast milk is not the proper food for many of these babies; it is entirely within

1. Recoveries 131; deaths 103.

reason to believe that some combination of water, fat, protein, sugar and salts other than that present in any breast milk will be found to be better adapted to the conditions existing in these infants. At present, however, we must frankly accept and face our ignorance concerning them. In spite of human endeavor they raise the infantile death-rate.

Consideration of the second point, the proper distribution of a limited supply of breast milk, presents a more hopeful outlook. It is generally believed that the giving of one or two feedings of breast milk to a bottle-baby during the twenty-four hours is beneficial and enables that baby to digest and assimilate higher percentages of the ingredients of cow's milk than he could do without this human milk. As far as healthy infants are concerned, this is undoubtedly true. To what extent this applies to sick infants, I have sought to learn from further study of the present cases.

The records of the breast-fed group have now been regrouped into three subdivisions, A, B and C: those receiving exclusively breast milk, those receiving at least half breast milk for a limited critical period, those receiving less than half breast milk for such a period. The mortality-rate has been estimated in each of these subdivisions, giving the following results:

A. Of 17 infants exclusively on breast milk, 10 died; mortality, 59 per cent.

B. Of 62 infants on at least half breast milk, 2 died; mortality, 3 per cent.

C. Of 58 infants on less than half breast milk, 29 died; mortality, 50 per cent.

Division A consists of desperate cases. We assumed, rightly or wrongly, that breast milk would give them the best chance for life; hence their diets consisted exclusively of breast milk. How unsuccessful we were the high mortality shows.

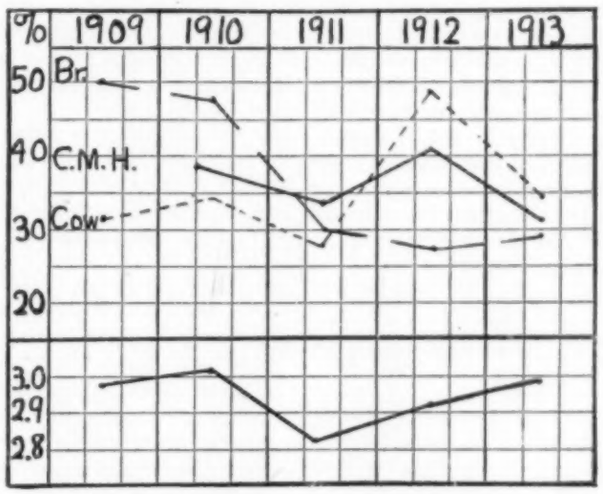

Chart showing infant mortality rates for the years 1909 to 1913, inclusive: Above, the solid black line shows the general hospital infant mortality; the broken line the rate among breast-fed infants; the dash line the rate among infants fed on cow's milk.

Below, the curve shows the deaths in the city of Chicago among infants 1 year old or under per thousand of population for the corresponding years.

The infants in division B seemed less serious, as a whole, than those in A, but more serious than those in C. They were accordingly given, not exclusively breast milk, but comparatively large amounts, to tide them over a critical period. The change for the better and the upward progress of most of these infants took place coincidently with the change to, and administration of, breast milk, and I believe the low mortality among them to be due to the considerable amounts of this milk received.

The infants in division C seemed somewhat less serious than those in either A or B; accordingly they received less breast milk and had a high mortality rate, half of them dying.

The high mortality in division A emphasizes the fact that human milk is not a panacea for all the ills of infancy, but in many cases is of no avail. Intensive study of such cases, by clinical and laboratory methods, will probably show that some combination of water and solids other than that found in breast milk is better adapted to correct the chemicophysical condition in which these infants enter the hospital.

The low and high mortality of divisions B and C, respectively, is significant: the one group received breast milk in abundance and suffered a mortality of only 3 per cent.; the other was "skimped" on breast milk and half died. The lesson is obvious.

MORTALITY BY YEARS

We have seen that the mortality rate of a group of babies fed partly on breast milk and partly on cow's milk is somewhat lower than that of a group of equal vigor fed on cow's milk alone, the investigation covering a period of three years. What has been the effect on the hospital infant death-rate as a whole? Is this lower on an average than it was before breast milk was used so extensively? Is the number of recoveries among the breast-fed babies sufficiently large to influence the general mortality?

The hospital infant mortality-rate as a whole has been ascertained for the years 1910 to 1913, inclusive; the mortality-rate in Groups 1 and 2 has been estimated yearly; finally, as an infant's hospital is apt to reflect in the severity of its cases, the severity of the same diseases prevailing in the community at large, figures of the infantile death-rate in Chicago, during the same period, are introduced for purposes of comparison. Curves have then been plotted, based on these figures in the accompanying chart.

Analysis of the curves as a whole is interesting. All show a drop from 1910 to 1911, the hospital curves reflecting the general drop seen in the city curve; from 1911 to 1912 there is a sharp rise in the cow-milk group, carrying up the general hospital rate, a reflection again of the increased city mortality; from 1912 to 1913 we see a marked drop in the cow-milk group, carrying down the general hospital rate, in spite of a continued rise in the city at large.

In the breast-milk curve, the high figures seen in 1909 and 1910 have already been explained. They are due to the scanty, irregular use of breast milk. They are of little significance but serve as a background and contrast to the marked decrease in the following two years, during which breast milk was used extensively. Especially interesting is the drop in 1912 coincidently with the rise in all the other curves, both of hospital and of city. Notwithstanding a season of severe intestinal troubles, we were able to save an increased number of babies taking breast milk, while the number of deaths of those taking cow's milk markedly increased, from 27 per cent. to 48 per cent.

There is a rise in the curve in 1913; it is, however, slight, only 2 per cent., and may well be due to the presence of an unusual number of well nigh hopeless

cases, there being on the list two cases of pyloric stenosis, one of erysipelas and ten of bronchopneumonia in a total of fifty-seven cases for the year.

In the curve based on the hospital infant mortality as a whole, we see that the mortality for 1910, before the extensive use of breast milk, was 36 per cent., and that it was 33 per cent., 42 per cent. and 32 per cent. for 1911, 1912 and 1913, respectively. Two of these last three years thus show a decreased death-rate, but in the third year, 1912, the rate was so high that the average for the whole period was 35.6 per cent., practically the same as in 1910, before the extensive use of breast milk was begun. Thus the average general rate has not been lowered by the use of breast milk. We have undoubtedly saved lives by its use, but not in numbers sufficient to lower the general infant death-rate. The time covered by the study, however, three years, is too short to warrant final conclusions and the figures are introduced only as a preliminary report.

DURATION AND COMPLICATIONS

One of the unfortunate factors in the management of hospital babies and one contributing largely to the high mortality is their prolonged stay in hospital. It seemed desirable in the present study to ascertain whether or not the breast-fed babies made more rapid progress than the others; whether or not, also, they were less apt to contract communicable disease. Accordingly Groups 1 and 2a were analyzed from these points of view. The average length of stay of all recoveries was estimated, likewise the number of complications among both the recoveries and the fatal cases. The results are as follows:

Average stay of Group 1	was 54 days
Average stay of Group 2a	was 34 days
37 per cent. of Group 1	developed complications
24 per cent. of Group 2a	developed complications

The more protracted stay of the breast-fed infants is striking. The greater proportion of complications among them follows as a natural result of this long stay; of the sixty-two cases with complications, only six had a complication on admission. Furthermore, the complications are more fatal among the breast-fed infants, 37 per cent. of these dying, as compared with 27 per cent. in the other group.

It is probable that in our desire to give the babies every possible chance we have kept them on breast milk too long, thereby delaying their discharge from the hospital. It apparently has not been possible to furnish them breast milk at home, and they have stayed until they have been "switched" to an exclusively cow-milk diet on which they could be sent home.

The problem is difficult, though not insurmountable. On the one hand is the necessity of feeding to a weak baby the food which in all probability will give him the best chance for life; namely, breast milk. On the other hand is the continued exposure to communicable disease—exposure of a baby with an already lowered resisting power. The solution of the problem lies in the earlier discharge from hospital and the continued use of breast milk from the hospital wet-nurse, oversight of the patient at home being continued through the out-patient and social service departments.

CONCLUSIONS

Comparative study of two groups of infants of unequal age and weight, the older and heavier group fed exclusively on cow's milk, the lighter and younger group on part human and part bovine milk, shows that the mortality-rate in both groups is the same.

Study of two groups of the same age and weight, fed as above, shows a mortality lower by 8 per cent. in the group fed partly on breast milk.

Infants seriously but not hopelessly ill, whose diet consisted of at least half breast milk over a critical period, show a mortality of but 3 per cent.

Infants somewhat less seriously sick, whose diet consisted of less than half breast milk, over a similar period show a mortality of 50 per cent.

Whenever possible, therefore, the diet of such seriously ill babies should consist of at least half breast milk throughout the critical period of their illness.

The use of a limited supply of breast milk in a large infant hospital, over a period of three years, has not reduced the infant mortality of that hospital during that period. The mortality, however, has not risen, notwithstanding the fact that during the same period there has been a steadily rising infant mortality in the city in which the hospital is located and from the infant population of which the hospital draws its patients.

Breast milk is not a panacea for all the ills of infancy, desperately ill infants showing a high mortality even when fed exclusively this kind of food.

URINARY ANALYSIS IN THE DIAGNOSIS AND TREATMENT OF DISEASES OF INFANCY AND CHILDHOOD*

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It is the design of this paper to point out the importance of fairly complete urinary examinations in disorders of infancy and the value of certain tests infrequently made which may furnish important information. The urinary analysis recommended may be run through in ten or fifteen minutes by a competent man in any properly equipped laboratory.

I am aware, of course, of the ordinary office examinations of busy physicians, the tests for albumin and for sugar, and also of the fact that commercial laboratories are used by many physicians to obtain more complete examinations without trouble to the physician himself. But it is not often that office examinations or laboratory examinations supply the physician with the most important facts to be elicited from the urine in the diagnosis of diseases of infancy and childhood, while in the case of infants where the procuring of a specimen is difficult, urinary analysis is often completely neglected. This neglect is in sharp contrast to the frequency of blood examinations in such cases, blood being readily procured by a prick.

The examination of a specimen of urine in a child acutely sick, especially if the diagnosis is obscure, is usually much more important than an examination of the blood or any other examination excepting the general physical examination by the physician.

The obtaining of a specimen of urine, while often difficult, especially in female children, is not really so difficult as is generally supposed. One difficulty is that infants pass a little urine very often. Accurate obser-

* Read before the Section on Diseases of Children at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

vations on the urination of infants have recently been made by Engle[1] who placed an infant over a receptacle for the urine so arranged that an electric current was formed which rang a bell whenever the child moistened the receptacle with urine. He found that an average infant taking about 800 c.c. (27 ounces) of food urinates from twenty-five to thirty times in twenty-four hours, or oftener than once an hour, and when the food was increased to 1,600 c.c. (54 ounces) the child would urinate from fifty to sixty times or more in twenty-four hours; that is, every twenty or thirty minutes. He also found that a young infant voided urine at regular intervals whether awake or asleep, while after 6 months of age they usually urinate only while awake.

While cribs have been made with receptacles for saving all the urine, for ordinary clinical purposes this is not necessary. In a male infant a bottle with a mouth sufficiently large for the insertion of the penis may be fastened to the child with plaster with full assurance that a specimen will be obtained within an hour if the child is awake. In a female infant the procuring of a specimen is more difficult, but a small cup placed under the infant whenever she wakes with a dry diaper, especially if pressure is made over the bladder, which at this age is an abdominal organ, will usually procure a specimen. If it does not, the next opportunity will be when a bottle is given, for during the time when a baby sucks at a bottle urine is apt to be excreted. In cases of pyelitis in female infants I have had no trouble, where there has been intelligent supervision, in securing several specimens a day without the use of any apparatus.

Of the conditions to be looked for in the urine we may note in order:

1. Dilution
2. Evidences of nephritis
3. Evidences of diabetes
4. Evidences of acidity
5. Evidences of acidosis
6. Evidences of intestinal intoxication
7. Evidences of pyelitis

But it is the acidosis, intestinal intoxication and pyelitis that I wish to emphasize, these being the important conditions to be constantly looked for in the disorders of childhood.

URINALYSIS

Before considering these abnormal conditions found in the urine of children I will review briefly the sort of urinalysis which I believe is essential to the intelligent diagnosis and treatment of disorders of children. This analysis, when the materials are ready, may be run through in a few moments.

The specific gravity is taken in the ordinary way with a urinometer.

A qualitative reaction may be obtained by the use of litmus paper, but for a quantitative reaction, which is quite important in treatment, a more accurate test with phenolphthalein is of advantage. For this purpose a phenolphthalein solution, a buret containing a decinormal sodium solution and a few grains of potassium oxalate are necessary. Twenty-five cubic centimeters of urine and a few grains of potassium oxalate are put into a test-tube and shaken. Two drops of phenolphthalein solution are added, and then drop by drop the normal sodium solution until the reaction occurs which is read off in cubic centimeters on the buret.

Albumin may be detected by the use of strong nitrate acid in cold urine or by boiling the urine and adding a few drops of acetic acid.

Glucose is detected by Fehling's solution, and if positive, is confirmed by a fermentation test with yeast.

To obtain acetone the urine is shaken up with a few drops of a freshly prepared sodium-nitroprussid solution. To this 2 c.c. of glacial acetic acid are added and over this a layer of 10 per cent. ammonia water. After standing three minutes a red ring indicates the presence of acetone.

For diacetic acid a 10 per cent. ferric chlorid solution is added to 5 c.c. of urine until the mixture clears. A Burgundy red-color indicates diacetic acid, the amount varying with the saturation of the color.

For indican, to 5 c.c. of urine 5 c.c. of strong hydrochloric acid are added. To this a drop of sodium hypochlorite solution and a few drops of chloroform are added. The test tube is inverted five or six times and allowed to stand for five minutes. A violet color indicates indican, while a red color indicates potassium iodid.

For phenol 5 c.c. of Millon's reagent are added to 1 c.c. of urine. This is boiled and a salmon pink color indicates the presence of phenol.

These tests are only a few readily made tests to indicate certain conditions. Acetone and diacetic acid are only two of the products of acidosis. Beta-oxybutyric acid, a third and earlier form of acidosis, is more difficult to test for and of less consequence.

Other substances that give evidence of intestinal intoxication likewise may be tested for, but these two, indican and phenol, are good representatives of the class and give one readily an indication of what one is dealing with, and I believe that these tests together with the test for bile, if necessary, and thorough microscopic examination of the sediment are all that are necessary for routine work.

The dilution of urine is indicated by its specific gravity. The specific gravity of the urine may give one a good clew to the amount of fluid taken, and while in those who are largely on a fluid diet the specific gravity is low, it is not uncommon in children of 3 or 4 years of age to find a very high specific gravity, and these children are usually those who take very little milk or other fluid.

ALBUMIN

The presence of albumin in the urine of children who have general disorders is not, to my mind, a necessary source of concern. Traces of albumin are very frequently found and unless this albumin occurs in a child with a nephritic history or is associated with or preceded by acute nephritic disorder, one may assume that it will disappear with an amelioration in the general condition of the child. The same may be said of hyaline casts in the urine, which in some children will occur in large numbers, and sometimes without the presence of albumin, and these casts may not signify any grave disorder.

Sugar is rarely found in the urine of children even in cases of marked acidoses. If it is found the possibility of a physiologic glycosuria due to over-indulgence in sugar should be borne in mind, but the persistence of sugar in a normally fed child is one of the gravest indications, diabetes in these young patients being almost universally fatal.

1. Engle: Rev. in Therap. Monatsch., 1912, xxvi, No. 5, p. 318.

Intense acidity of the urine unaccompanied by the products which we call an acidosis may produce such symptoms as intertrigo and frequent micturition, which are readily relieved by a neutralization of the urine by the internal administration of alkalies.

ACIDOSES

To attempt to give a review of the theories of the cause and significance of acidoses would take more time than we have, and would not lead us probably to any definite conclusions. Acidoses have been mostly studied as they occur during the disturbances of pregnancy, particularly as they occur in diabetes, in acute yellow atrophy of the liver and after chloroform anesthesia.

All this literature, however, we will lay aside to consider the association of acidoses in the common ailments in children and their treatment.

By acidosis I mean a condition associated with a considerable amount of acetone and diacetic acid in the urine. In any urine that is very markedly acid in children the presence of these substances should be suspected and looked for. A fairly regular accompaniment of these attacks of acidoses is the flavor of acetone in the breath of the child, and on this alone a diagnosis can often be made. Acetone may, however, occur in the urine unaccompanied by acetone breath, and acetone and diacetic acid may be present in a urine that gives an alkaline reaction. An acidosis occurring in very early life is that found in breast fed babies who are taking and retaining more breast milk than they can properly digest. They have frequent movements that are markedly acid. They become irritated under the diaper and if the food is not cut down will soon break out in an acute general eczema. In such cases the remedy is easy of application. By weighing before and after nursing one may ascertain the amount of milk the child is getting at each nursing, and this is often 5 to 6 ounces in a child 6 weeks old, and when the breast feeding is cut down to a suitable amount the eczema rapidly disappears and the child recovers.

Almost all intertrigo in babies is caused by an acid urine and this may be associated with the presence of acetone and diacetic acid. This condition is most successfully combated by a neutralization of the urine in addition to the use of external applications. In neutralizing the urine care must be taken that it is not made strongly alkaline, for I believe it may then be as irritating as before.

Most of the attacks of vomiting in children are accompaniments of acidoses, excepting those caused by an overloaded stomach, while in persistent attacks of vomiting the condition of acidosis is usually very marked. Those cases known as cyclic vomiting, where children from 3 to 10 years of age have repeated attacks of vomiting with a markedly acetone breath which last for a number of days, while not necessarily due entirely to acidosis—for in these cases there is a large nervous element—are usually preceded and accompanied by acidoses and are best treated by alkalies and elimination. These attacks are best controlled by excluding nervous irritation, by watching the tongue of the child and on the slightest indication of a recurrence of an attack, putting it to bed, relaxing it with a warm bath, and administering alkalies and laxatives. By these methods, promptly and vigorously applied, the habit of recurring attacks may best be broken.

INTESTINAL INTOXICATION

In addition to these attacks of acidoses we have another class of cases called intestinal intoxication which may or may not be associated with acidoses. Attacks of intestinal intoxication are characterized by the presence of indican and phenol in the urine. Such attacks are common in young children and an appreciation of their nature is an aid in intelligent treatment. One of the earliest accompaniments of this condition is seen in marasmic babies during the first months of life, who after a stationary weight or a gradual loss in weight, show in one day a gain of from ½ to ¾ pound, and on examination it is found that there is an edema of the hands and feet or of the face. These are usually severe cases and often terminate fatally, and this edema is often associated with intestinal intoxication, while the stimulating cause may be the administration of too much sodium chlorid.

Another group of cases are those that have urticaria with localized edema. It is not very uncommon that a child who has been doing pretty well, except possibly for a coated tongue, is found one morning with one eye entirely closed from swelling. He has little or no fever, is less active than usual, and may have no other swelling, but sooner or later other evidences of urticaria appear. If with these attacks the child vomits, we usually find an acidosis associated with the intestinal intoxication. Examination of the urine in these cases is very important in eliminating a diagnosis of a much more serious condition. As these children improve under treatment the evidences of acidosis and intestinal intoxication disappear.

The eczema of childhood which is often resistant to the treatment administered is usually curable if the food is carefully regulated on a basis of required calories, the intestinal intoxication eliminated and the surface kept well covered with appropriate ointment. The treatment of these intestinal intoxication cases is very similar to that used in acidoses—free elimination from the intestinal tract and the administration of alkalies. In the administration of alkalies, however, both in acidoses and in intestinal toxemias, careful control of the reaction of the urine must be had by the use of litmus paper or phenolphthalein, so that when a neutral or slightly alkaline reaction is reached the alkalies may be reduced in dose or discontinued. The alkalies that are most valuable for this purpose, as being in no way irritating and well taken by children, are the bicarbonate and citrate of soda, while milk of magnesia, which is strongly alkaline, makes a good laxative to use in combination with the bicarbonate and citrate of soda. Lacto-bacillary cultures may also be administered with benefit in cases with offensive stools, or with abdominal distention from gas formation.

The growing pains of children are often associated with acidoses and intestinal intoxications and may be relieved by treatment which rectifies these irregularities.

PYELITIS

The third condition in the urine which should be carefully looked for in every case of unexplained fever is pyelitis. Cases of pyelitis, many of which are readily curable, are more commonly allowed to run on unrecognized than any other disease of infancy, not excepting otitis and scurvy; for pyelitis may give no evident clew to diagnosis unless the urine is examined.

The laboratory diagnosis is made by finding in the precipitate of a centrifugalized specimen of urine a

material number of leukocytes. One or two leukocytes in a D-field (Zeiss) of precipitate of a female baby does not indicate a pyelitis, but only the washing from the vulva. That number, however, in a male baby or more in a female baby should render the diagnosis suspicious, and then other specimens obtained so as to avoid contamination should be examined for both leukocytes and bacteria.

A clean sample may be obtained by using a bottle and cork that have been in boiling water, by rinsing the chamber with boiling water and washing thoroughly the urethral orifice in a male baby and the urethral orifice and vulva in the female. With these precautions taken one usually obtains almost a pure culture of the infecting organism. Or in pyelitis cases the specimen may be obtained by a sterile catheter into a boiled bottle or sterilized test-tube.

The pyelitis of infancy is an acute infection which may or may not be accompanied by fever, but which, in any event, should be promptly cured, for cases that have not been cured and have gone on to a fatal termination have shown suppurative processes in the kidney tissue. The diagnosis of pyelitis is often fairly sure before the urinary examination is made, if one is accustomed to the type of symptoms that accompany it. The temperature is usually of a marked remittent type and in severe cases is apt to reach more than 105 F. and sometimes 106 F. It occurs usually in children near the end of the first year, and far more often in female children than in male. On this account pediatricians are apt to feel that the infection has come from the outside through the smearing of the colon-bearing stools over the buttocks of the child, thus reaching the vulva, and the infection traveling up the urethra. The inside infection through the lymphatics is, of course, possible, and may frequently occur, but the greater incidence of pyelitis in female children can best be explained on the theory of external contamination. This likelihood of external contamination is one of the strongest arguments for the early control of defecation in children. Children with intelligent nurses may be trained by the aid of glycerin suppositories to have a morning movement in a bowl when not more than 2 or 3 months old. The formation of such a habit in early life should not be neglected.

Pyelitis is likely to be preceded by a disturbance of the bowels, usually not an acute colitis, but a condition in which the movements are a little green and perhaps slightly more numerous than normal. The attack of pyelitis is usually ushered in by a slight rise of temperature, which most often quickly subsides on the administration of sufficient alkalies to neutralize the urine, and many authorities believe that this administration of alkalies should be the main reliance in pyelitis.

Although cases of pyelitis are almost all colon infections, the reaction to treatment varies materially, and while most children are cured by neutralization of the urine by alkalies, there remain many children in whom this treatment has apparently no effect, and for these cases other methods of treatment must be sought. Perhaps the best treatment in many cases for the cure of the constitutional symptoms is the administration of colon vaccines which produce a reduction in the temperature; but so far as I know, the vaccines do not cure the disease, though they apparently cure it. The child loses its fever and will increase in weight and seem perfectly well, but when the urine is examined one finds the same pus and bacteria that existed before. We fortunately have now the first internal antiseptic that has ever proved efficient for any part of the body, and hexamethylenamin is certainly an absolute antiseptic for certain infections of the urinary tract. It, however, is a drug that should be given with care to infants.

I have seen marked cyanosis follow the administration of one-half grain of hexamethylenamin in a child 8 months old, and a similar attack follow the second administration of the same dose. So in no infant should doses be begun of more than ½ grain; but if the infant and its urine can be carefully watched and no reaction follows the administration of ½ grain, the dose can be rapidly increased. I have, however, administered a dram a day of hexamethylenamin to two babies of 6 months with colon cystitis and acid urine, neither weighing more than 12 pounds, without causing any evident irritation of the kidneys and without curing the cystitis. Such large doses if given should be continued only a few days, during which time the child and its urine should be under close daily observation for evidences of kidney irritation.

CONCLUSIONS

In every urinary analysis in children, whether with fever or without, careful tests for acidity, for acidosis and intestinal intoxication should be made, and also an accurate computation of the number of leukocytes present. Should these leukocytes be constantly present in any considerably increased amount an examination for bacteria in a fresh specimen procured in such a manner as to avoid contamination or drawn by a catheter, should be made and if present should be grown on culture media for identification. By neglecting to make these tests many failures to properly diagnose and promptly cure disorders in childhood may occur.

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ABSTRACT OF DISCUSSION

DR. J. P. SEDGWICK, Minneapolis: At the St. Louis meeting of this section I was able to report that in recurrent vomiting we have a greatly increased amount of creatin and creatinin, especially creatinin. At Chicago a year or two later I was able to show that increased creatin and creatinin excretion accompanies the attack. In the meantime Mellanby had reported that the creatin and creatinin excretion and acidosis increase with attacks of recurrent vomiting. It has been shown by physiologists that acidosis is produced and occurs with the withdrawal of food, especially with the withdrawal of carbohydrates, and creatin and creatinin excretion also increase under the same conditions. I think we should be careful not to mistake the acidosis for the cause or the fundamental part of recurrent vomiting, when we do know that the withdrawal of food, especially carbohydrates, or an increase in the amount of fat ingested, will produce these acids. I think many have made the mistake of considering the effect to be the cause. Based on the fact that infections of the urinary tract occur more frequently in female children, we think it must be due to infection through the urethra. We have not been able to find any experimental proof. Dr. Huenekens worked with me, trying to cause ascending infection in guinea-pigs, but we were not able to accomplish it.

DR. S. M. HAMILL, Philadelphia: Will Dr. Sedgwick say what relation creatin and creatinin bear to these attacks? Is elimination increased before the attack? In other words, is it a premonitory symptom?

DR. SEDGWICK: Mellanby's report shows that he found an increase of creatin and creatinin as well as acidosis just before the attack. I reported one case in which a child having repeated attacks of recurrent vomiting, also had fever and appeared to be coming down with an attack of recurrent

vomiting, and creatin and creatinin did increase without the typical vomiting. In many cases when we had recurrent vomiting, I did not get much increase in creatin and creatinin before vomiting. Of course acidosis and acid bodies come up at the same time—I believe in many cases owing to the withdrawal of carbohydrates.

Dr. Joseph I. Linde, New Haven, Conn.: It is important to get complete specimens of urine, or at least several specimens during the day. Pus is not present in all specimens during the day, and if several specimens are not examined one may easily fail on the diagnosis.

Dr. Henry F. Helmholz, Chicago: I wish to emphasize a point made by Dr. Linde, not only to take several specimens on one day, but specimens for several days running, especially in those chronic cases, in which one may find no pus for several days. In recurring cases, in which the symptoms are indefinite, one sometimes gets a sudden gush of pus after practically negative urinary examinations covering a period of several days. With regard to the finding of albumin in the urine in older children, one case is well recognized, namely, orthostatic albuminuria, which should be considered, because, by means of exercises, this condition can be cured. Whether or not it is of any great harm to the child to be excreting albumin, is not for me to decide. In this well-defined group of orthostatic albuminuria we have an explanation of why the child is passing albumin. Dr. Freeman called attention to overfeeding; it seems to me just as important to recognize cases of acidoses caused by underfeeding. As Dr. Sedgwick has said, the withdrawal of carbohydrates gives rise to this condition, and in children who are underfed a very good indication of this is the presence of diacetic acid in the urine.

Dr. W. W. Butterworth, New Orleans: If, through Dr. Freeman's paper the attention of the general practitioner can be called to the great need of examining the urine of infants and children more frequently than is generally done, we will have accomplished a great deal. It is easy to secure a specimen of urine from infants—especially female infants. Apart from albumin and sugar examination, the test for indican, acetone bodies and the presence of pus is important. Another thing which should be mentioned is the frequency of pyelitis occurring in boys as well as in girls. At the last meeting of the International Medical Association, Dr. Thompson of Edinburgh reported twenty-seven cases of pyelitis occurring in boys. I, as well as others, had lost sight of the fact that it occurs more frequently in girls than boys. My fatalities have occurred in boys instead of girls. Just why is not clear to me. I believe we are apt to overestimate the importance of acetone and diacetic bodies in the urine. Almost any febrile disturbance will cause their presence. The simple finding of them does not mean acidosis.

Dr. Henry Heiman, New York: First in importance is the examination of the urine at various times. In orthostatic albuminuria, if we examine the first specimen before the patient is out of bed, we will find it negative. As soon as he is up and around the albuminuria will be present. We know this is probably due to pressure on the venous system of the kidneys. It is better to take morning and evening specimens in cases of suspected orthostatic albuminuria. In infectious diseases, when we examine the first twenty-four-hour specimen we find it as a rule containing albumin, but we all know that real nephritis occurs later, as in the third week in scarlet fever. With regard to obtaining urine in children, I have been fairly successful with Dr. Chapin's receptacle. In females I never hesitate to catheterize when necessary with a small ureteral catheter. This is thoroughly sterilized, of course. There is no difficulty in obtaining urine. With regard to types of pyelitis, we all believe we have ascending, descending and transparietal types. My experience has been that they are much more frequent, in New York, in females than in males. We should state specifically with what type of pyelitis we are dealing. The majority are due to the *Bacillus coli communis*. I have one case in the hospital of the pyocyaneus type. I believe the majority are of the ascending type. The colon bacillus has been found in the blood, but in rare instances. With regard to the treatment of these patients, I must say if they do not get well in ten or twelve days with or without urotropin, they become chronic. The Germans believe, in such cases as have been mentioned, in which there is free urine for several days and a relapse, that it is due to punctate abscesses in the cortex of the kidney. For the diagnosis of these cases Dr. Edwin Beer has given an excellent test—methylene blue. For a few days the urine will be green, then it becomes normal, then when an abscess bursts, it will be green again. This test is a very useful one.

Dr. Kate C. Meade, Middletown, Conn.: Is it possible, by regulating the urine, to control the eczema which these children sometimes have?

Dr. R. G. Freeman, New York: A variation in the amount of pus in the urine at different times in the day does of course occur. As to using the urine from a squeezed diaper, that is better than nothing, but one never knows what the diaper may contain, and what it does contain will appear in the urine. It is perfectly simple to obtain a specimen in a clean vessel in all cases. I think modifying the urine aids much, but diet is the main factor in eczema.

AMEBIC DYSENTERY IN CHILDREN *

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Amebic dysentery is a relatively rare disease in children, not because children are not susceptible to the infection but because they are less exposed to the etiologic factors which cause the infection in the adult. It is possible that in children it may exist much more often than is believed but may escape detection. The four cases reported below are instances of this.

In the Charity Hospital in New Orleans where there have been seen in the out-patient department for the last eight and a half years an average of 20,543 new cases annually, and where there have been admitted annually an average of 11,077 cases, or where 94,161 cases have been admitted, only 313 were cases of amebic dysentery, and of these four occurred in children under 12 years. Two of these were in my service.

At the Touro Infirmary in my service in over 3,000 children there were four cases of amebic dysentery. Two of these children were admitted to the Charity Hospital, because the Touro beds were filled, and are included in the four cases in the Charity Hospital. Besides my four cases at the Touro Infirmary there were two others, making a total of six cases at this institution.

Of the eight cases, one, after the condition was diagnosed, deserted.

Amebic dysentery is more prevalent in the male than in the female, due, it is generally believed, to the more active life of the male with the incident greater exposure; and so it might be argued, the lesser exposure may hold good for the relative infrequency in children. The younger the child the less often is the disease found. This is in accord with our belief of the sources of infection, more particularly water and green vegetables, as the smaller babies have boiled water, as a rule, and do not yet have vegetables. As they grow older the exposure, and consequent liability to infection is greater.

The symptoms of amebic dysentery in children do not differ from those in the adult. The abdominal

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pain, the frequent stools containing mucus, blood and, at times pus, the tenesmus, anorexia, indigestion, anemia, emaciation and low temperature, loss of weight, flabbiness of muscles, dry skin and sallow complexion are more or less constantly found, depending on the severity of the disease. The blood picture is one of secondary anemia.

The diagnosis is not difficult to make if a microscopic examination of the warm. liquid stool, free from urine, is made; or better still, if a rectal tube is passed and the bloody mucus or small pieces of necrotic tissue thereon are examined on warm slides. The ameba will be most readily found in this way. The condition from which amebic dysentery is to be differentiated in children is bacillary dysentery. In the latter condition the onset is usually more acute, temperature higher, systemic disturbance greater, the child is more toxic and less sallow, and the agglutination test may be positive, and the dysentery bacilli but no amebas are found in the stools. The facies in the two dysenteries are different and characteristic in each.

The prognosis depends on the severity of the disease and the complications, more particularly abscess of the liver, terminal infection, exhaustion in protracted cases, and intercurrent diseases.

Conclusions cannot be drawn from a few cases but in a condition as infrequent as is amebic dysentery in children, it is excusable to venture some suggestions from the study of a few cases.

The treatment of the seven cases (because one of the eight patients deserted after the diagnosis was made) referred to in the beginning of this paper consisted of ipecac in two cases and emetin in five cases. The two patients who were given the ipecac in the form of pills were 11 years and 6 years and they received 380 grains in 27 days and 243 grains in 25 days, respectively. In a third case ipecac was attempted but because of the inability of the patient to swallow the ipecac pills emetin was given with, I am told, satisfactory results. The four remaining patients, aged 8 5/12, 7, 4 and 4 years, respectively were given emetin. The 7-year-old child was given 4⅔ grains in five days, being given ⅓ grain three times a day. The amebas disappeared from the stools on the fourth day. The plan adopted in the treatment of my three patients was to pass the tube daily, and as long as amebas were found to give 1 grain emetin hypodermatically at one dose daily. When the amebas were no longer found the tube was passed every other day for two or three observations; then the interval of passing the tube was lengthened. The passing of the tube was not discontinued until after magnesium sulphate or castor oil was given and no amebas found.

The diet should be liquid until the blood and mucus disappear, when soft food may be given. Rest is absolutely essential, not only to the individual, but to the bowel. Emetin seems to provide rest to the latter.

CASE REPORTS

CASE 1.—F. A., white male, 1 year and 11 months old, native of Louisiana and resident of Donner, La., was brought to my clinic at Touro Infirmary, Nov. 8, 1912, because of loose, bloody stools.

His family history was negative, except that there had been two miscarriages. There were three well children and no bowel trouble in the family. He was a full term child and born after a difficult labor. He was breast-fed and after his fourteenth month ate everything. His development was normal. He had had no other illnesses.

In June, 1912, his present trouble began with frequent stools, twelve to fifteen a day, containing slime and much blood, and accompanied with pain and straining. In August there appeared a lump in the left inguinal region which disappeared from time to time. During the present illness the patient has had slight fever.

Physical examination showed a fairly developed child weighing 21 pounds. He had a small left inguinal hernia. A rectal tube was passed and amebas were found. Otherwise his examination was negative. He was given an admission card but was not seen again. This is the patient that has been alluded to as having deserted.

CASE 2.—W. O., white male, 4 years old, native of Louisiana, was brought to me July 25, 1913, from Baton Rouge, La., with a complaint of frequent and bloody stools.

His father and mother were both living and healthy as were also his two sisters and one brother. There was no other member in the household with bowel trouble.

He was a full-term child delivered normally. He was fed exclusively on the breast for nine months, after which cereals and a proprietary food were given until his eleventh month when he was gradually put on a full diet, eating everything at the age of three. When 2 years old he had fever for four days which was called "malaria." The diagnosis, however, was not confirmed microscopically.

TABLE 1.—DATA IN CASE 2*

Dat 1913	Temp. Min. and Max.	Med.	Tube Passed	Ameba	Stools		Description	Remarks	Diet	Blood						
					Day	Night				Hb. %	R.B.C.	W.B.C.	Neut. %	S.L. %	L.M. %	Eos. %	Bas. %
7/25	98.6-100	.....	.....	.....	.....	0	.....	.....	.....	50	4,116,000	14,600	67	22	4	6	
7/26	90.6-100	Emetin ⅔ gr.	+	+	3	3	Loose; brown; blood; mucus	Complained of pain in abdomen	Liquid								
7/27	99.4-100	Emetin 1 gr.	+	+	3	1	Loose; brown; blood; mucus	Pain									
7/28	98 -100	Emetin 1 gr.	+	+	0	0	.....	Feeling comfortable	.....	.....	.....	14,000	61	24	8	6	1
7/29	98 - 99.4	Emetin 1 gr.	+	+ †	0	0	.....	Comfortable									
7/30	99 -100	Mag. Sulph. 2 dr.	+	—	3	0	Liquid and yellow; no blood; no mucus	.....	Liquid	.....	.....	11,000	69	22	8	1	
7/31	99.2- 99	.....	+	—	1	0	Semisolid; yellow; no blood; no mucus	Tube passed 22 hrs. after Mag. Sulph.	Soft								
8/1	98 - 99.8	.....	.....	.....	0	0	.....	.....	Soft								
8/2	99.8	Milk Mag. Mag. Citr.	+	—	0	0	.....	.....	Soft								
8/3	99.8	.....	.....	.....	0	0											
8/4	99.8	Mag. Sulph. ½ oz.	+	—	1	0	Liquid.....	.....	.....	.....	.....	9,300	57	35	8		
8/5	99.8	Milk Mag.	+	—	1	0	Semisolid.....	.....	Full diet								
8/6	99.8	.....	.....	.....	.....	.....	.....	Hungry between meals									

* Urine negative except for indican. † Inactive.

The patient lived in the suburbs of the city but used the water furnished by the city's waterworks. He was very fond of green vegetables, which he frequently stole and ate.

In November, 1912, he ate a great number of green pecans and within a week afterward his stools became loose, there being two or three movements daily. About one month later his stools became worse and the movements were accompanied by severe straining. They contained a great deal of blood and mucus. His stools were very frequent—from twelve to twenty-six daily. He was relieved somewhat after a consultation was held by two physicians, but this relief was only temporary. He had experienced periods of relief followed by relapses intermittently since the onset of the disease. The patient had lost much weight from December, 1912, to March, 1913.

He was admitted into Touro Infirmary on the evening of July 25, 1913, with a temperature of 98.6 F., pulse 102, respiration 24. He had no stool during the night.

On the morning of July 26 a rectal tube was passed and amebas were found. He was given emetin, ⅔ grain, by needle, was kept in bed and was put on liquid diet. In the next twenty-four hours he had six stools which were loose, dark brown and contained mucus and blood. He complained of pain in his abdomen and strained much at stool. The next day the tube was passed again, amebas found, and emetin, 1 grain by needle was given. He continued to complain of pain in the abdomen, but straining at stool was not so marked. During the next twenty-four hours he had only four stools which were of the same character as during the previous twenty-four hours. His urine examination was negative, except that it contained much indican.

On July 28 the tube was passed, amebas found, though not so many, and another hypodermic of emetin, 1 grain, was given. There were no stools in the twenty-four hours following and the patient was fairly comfortable.

On July 29 the tube was passed and a few amebas (inactive) were found. Emetin, 1 grain, by needle was again administered. As before there were no stools in the twenty-four hours, but the patient remained in a perfectly comfortable condition.

TABLE 2.—DATA IN CASE 3*

Date 1913	Temp. Min. and Max.	Med.	Tube Passed	Ameba	Stools		Description	Remarks	Diet	Blood						
					Day	Night				Hb. %	R.B.C.	W.B.C.	Neut. %	S.L. %	L.L. %	L.M. %	E. %
9/ 2	.....	.....	.....	.....	.....	1	Liquid, mucus, blood	Cries with pain in abdomen	Eggs and milk								
9/ 4	100.5	Emetin ⅔ gr.	+	+	.....	4	Liquid, mucus, blood	Cries with pain in abdomen									
9/ 5	.....	Emetin 1 gr.	+	+	.....	4	Loose, mucus; no blood	More comfortable									
9/ 6	100	Emetin 1 gr.	+	+	.....	.....	.....	Deserted									
9/11	.....	.....	+	—	.....	.....	.....	Returned.....	.....	80	5,888,000	13,900	60	40			
9/16	100	.....	+	—													
9/23	.....	.....	.....	.....	1 or 2	.....	Normal.....	Deserted									
9/27	.....	.....	.....	.....	?	?	Blood reappeared										
10/ 2	.....	Emetin 1 gr.	+	+	?	?	Blood mostly at end of stool	Returned.....	Eats everything								
10/ 4	.....	Emetin 1 gr.	+	+	?	?	Stools yellowish and brownish	Deserted									
11/ 4	98 -100	Castor oil	.....	.....	0	5	Mucus, blood, pus	Returned.....	Liquid								
11/ 5	98 - 99.3	.....	+	+	2	0	Mucus, blood, pus	.....	Liquid	85	4,775,000	8,660	58	30	4	6	2
11/ 6	98 -100	Emetin 1 gr.	+	+	0	0	.....	Emetin at 9:00; vomited 9:45; pain in abdomen									
11/ 7	98 -100.5	Emetin 1 gr.	+	+ ‡	1	0	Small dark green	Rested well, no vomiting	.....	....	.....	7,458	59	31	6	4	
11/ 8	96.5- 99.5	Emetin 1 gr.	+	—	2	0	Normal.....	Rested well, no vomiting	Soft	....	5,700,000	6,600	48	40	6	6	
11/ 9	98.5- 99.5	Emetin 1 gr.	+	—	1	0	Loose, large flakes; mucus	Comfortable, no vomiting									
11/10	98 - 99	.....	+	—	2	0	Normal.....	.....	.....	....	.....	8,202	46	47	6	1	
11/12	98.5- 99	.....	+	—	0	0	.....	.....	.....	....	5,125,000	9,895	41	48	7	4	
11/14	99.5- 98.5	.....	+	—	1	0	Normal.....	.....	.....	....	.....	7,465	36	55	7	2	
11/17	96.5- 99.5	.....	+	—	1	.....	.....	.....	.....	....	5,150,000	5,708	24	67	7	2	
11/21	99.5	.....	+	—	1	.....	Large, loose, watery stools; mucus; no blood	.....	.....	....	.....	3,819	20	68	9	3	
11/22	99.5	.....	.....	.....	1	.....	Loose stool; mucus; no blood										
11/24	99.5	.....	+	—	0	.....	Loose stool; mucus; no blood										
11/27																	
11/28	99.5	.....	+	—	.....	.....	Large brown stool	Deserted.....	.....	....	5,025,000	6,076	30	58	11	1	1
1914																	
2/11	.....	.....	.....	.....	.....	3	Yellow; much mucus and blood	Returned.....	Light								
2/12	99.5	.....	+	.....	1	0	Yellow; much mucus and blood	.....	Liquid								
2/13	100	Emetin 1 gr.	+	.....	1	0	Yellow; much mucus and blood	Rested quietly									
2/14	99.8	Emetin 1 gr.	+	.....	0	0	.....	Vomited 1 hour after emetin	.....	....	.....	8,000					
2/15	98.5	Emetin 1 gr.	+	.....	0	0	.....	.....	.....	....	.....	10,000					
2/16	100	Emetin 1 gr.	+	.....	2	0	No blood.....	Rested well									
2/17	0	.....	+	—	1	;	No blood.....	.....	Soft	....	.....	11,980					
2/18	.....	.....	.....	.....	0	0											
2/19	.....	.....	+	— §	1	0											
2/20	99.5	.....	+	—	0	0											
2/21	99	Emetin 1 gr.	+	—	1	0											
2/22	99.8	Emetin 1 gr.	.....	—	1	0	.....	.....	.....	....	.....	10,464					
2/23	99.5	Emetin 1 gr.	+	—	0	0											
2/24	100	.....	.....	.....	0	0											
2/25	98.5	Emetin 1 gr.	+	—	1	0	.....	.....	.....	....	.....	10,850					
2/26	99.3	Emetin 1 gr.	+	—	1	0	.....	Vomited after emetin									

* Urine negative except for indican. ‡ Few encysted; non-active. § Red blood-corpuscles.

On the morning of July 30 the passing of the tube showed no amebas. No emetin was administered but magnesium sulphate 3ii was given, from the effect of which he had three stools which were liquid and yellow and contained no blood and no mucus.

The tube was passed on the morning of July 31, twenty-two hours after the magnesium sulphate was given and no amebas were found. He was allowed to have soft food and continued to improve in every way. There was a tendency toward constipation which was met by the administration of milk of magnesia. The tube was passed every other day until Aug. 4, 1913, with negative findings. On August 4 he was again given magnesium sulphate and again the passing of the tube twenty-four hours afterward was negative. He was then placed on full diet and was hungry between meals. On August 8, after a negative finding on passing the tube, he was discharged as cured. The patient weighed 32 pounds, 11 ounces on July 27, 1913, and 34 pounds, 2 ounces on Aug. 4, 1913. Wassermann made on admission, July 26, 1913, was negative.

On August 24 he was brought back for observation. His parents stated that the previous week he had had as many as five stools daily and that the day before (August 23) he had vomited after drinking pop, had high fever and complained of pain in his stomach. While at home he had eaten everything. He had had a cold for the past week. He was readmitted into Touro Infirmary. He had a cough but examination was otherwise negative. His bowels were constipated. Physical examination was negative. On passing the tube no amebas were found. His urine examination was negative except for a small amount of indican. His blood showed a total white count of 9,300, small lymphocytes 35 per cent., large mononuclears 8 per cent., polymorphonuclear neutrophils 57 per cent.

The tube was passed again on August 26 with negative findings. There were no ova found at any time in his stools. Frequent reports have been received about the patient's condition and up to the present time, eleven months afterward, he has remained cured.

CASE 3.—A. M., white male, 4 years old, native of Louisiana and resident of New Orleans, came to my clinic at Touro Infirmary on Sept. 2, 1913, because of frequent and bloody stools.

His father and mother and brother were all living and healthy. There was no dysentery in the family.

The patient was a full term child of normal delivery. He was breast fed exclusively for twelve months after which table food was added to his diet and at 21 months the breast was discontinued. His development was normal. At 18 months he had measles and whooping-cough, when he was ill for about four or five weeks.

He had used only city water but ate a considerable amount of candy from different stores, and he also ate some green fruit.

The present illness began fifteen weeks previous to this report, when patient complained of pain in his stomach and passed blood and mucus in his stools. He was taken to one of the hospitals where he was treated for two weeks without any results. Some time afterward he was taken to a physician who gave him a white medicine (presumably bismuth) which had a transient beneficial effect. In a week, however, the condition reappeared and the patient was brought to me. During the attacks of dysentery he had from twelve to twenty-four stools daily and complained of pain in the abdomen and much straining at stool.

He was brought to the out-patient department of Touro Infirmary Sept. 4, 1913. A rectal tube was passed, amebas found, and he was given emetin, ⅔ grain. The following day his mother reported that though the stools were liquid and there were four in the twenty-four hours she had noticed no blood, but some mucus. The passing of the tube showed amebas and he was given 1 grain emetin.

Sept. 6, 1913, there was a tendency toward constipation. The tube again showed amebas and he was given emetin, 1 grain. After this the mother did not return for the treatment and the patient was recorded as having deserted. Five days later she returned and the examination after passing the tube was negative. She brought the patient back on two occasions convenient for herself, and then again discontinued reporting.

Oct. 2, 1913, the patient was brought back to the clinic complaining that on September 27 blood reappeared in his stools and had continued daily since then. The stools were yellowish, the blood being passed mostly at the end of the stool. October 2, however, the stool was blackish. The patient had a good appetite and had eaten everything he wanted. On passing the tube amebas were found and the patient was given emetin, 1 grain. The next day the patient did not return. On the third day amebas were found again and emetin, 1 grain, was given. The mother then took it on herself not to return with the patient for further treatment as the child had improved, and the patient was again recorded as having deserted.

November 4 the patient was brought to the Touro out-patient department for the treatment of the same condition (frequent, bloody stools). The mother hesitated a long time

TABLE 3.—DATA IN CASE 4*

Date 1914	Temp. Min. and Max.	Med.	Tube Passed	Ameba	Stools		Description	Remarks	Diet	Blood							
					Day	Night				Hb. %	R.B.C.	W.B.C.	Neut. %	S.L. %	L.M. %	Eos. %	Bas. %
5/26	100	.....	.....	.....	.....	1	Large; brown; mucus; blood	Slept well.....	Liquid								
5/27	100 -100.5	.....	+	+	1	0	Large; brown; mucus; blood	Slept well.....	Liquid	80	.....	16,000	75	25			
5/28	99.5-100	Emetin 1 gr.	+	+	2	0	Large; brown; mucus; blood	Slept well.....	Soft	....	.....	.....	65	30	3	1	1
5/29	99 -100	Emetin 1 gr.	+	+	1	0	Semisolid; brown; little blood and mucus	Slept well.....	Soft	....	2,500,000	12,500					
5/30	99 -100	.....	+	—	0	0	.....	.....	.....	....	.....	11,400	75	21	2	1	1
5/31	99 -100.4	Castor oil ½ oz.	+	—	1	0	Mucus; no blood	.....	.....	....	.....	8,100	63	33	2	1	1
6/ 1	99 - 99.8	.....	+	—	0	0	.....	.....	.....	35	.....	9,200	66	23	9	2	
6/ 2	99 -100	.....	+	—	0	0	.....	.....	.....	30	.....	12,083	61	33	5	1	
6/ 3	98 - 99.5	Castor oil ½ oz.	+	—	0	0	.....	.....	.....	35	.....	10,250	58	38	3	1	
6/ 4	98 - 99.5	.....	.....	.....	0	0	.....	.....	.....	25	.....	12,839	57	38	3	2	
6/ 5	98.3- 99.4	Mag. Sulph. 1 dr.	+	—	0	0	.....	.....	.....	30	.....	11,210	50	34	15	1	
6/ 6	98.3- 99	.....	+	—	0	1	Normal										
6/ 7	99 -100.4	.....	.....	.....	1	0											
6/ 8	99 -100	I. Q. S.	+	—	0	0	.....	.....	.....	35	.....	10,100	55	30	14	1	
6/ 9	98.3- 99	I. Q. S.	.....	.....	0	2	Normal										
6/10	99.2-100	Mag. Sulph. ½ oz.	.....	.....	0	3	Normal.....	Coughed									
6/11	99 -100.2	.....	+	—	0	0	.....	.....	.....	30	.....	6,853	43	46	9	1	1
6/12	98.3	Castor oil ½ oz.	.....	.....	0	2	Normal.....	.....	Full								

* Urine negative except for indican.

before returning because she had discontinued of her own accord on the previous occasions. As there were no empty beds at Touro Infirmary and as it was believed best to treat the child in hospital, he was admitted into my service at Charity Hospital.

On admission he was given a dose of castor-oil. The next day the tube showed amebas in great numbers. He was given emetin, 1 grain daily, as long as amebas were found and for two days longer because of his previous unsatisfactory treatment. After the first twenty-four hours no active amebas were found and likewise after the second twenty-four hours. No amebas were seen for two consecutive days thereafter. The tube was then passed every other day for four days and finally twice weekly so that observations were carried over a period of three weeks. During his stay in the hospital it was extremely difficult to keep the patient in bed and whenever he saw the opportunity he would get up and play about in the ward.

His stools became a little loose and contained a small amount of mucus, but his mother took him away without his being discharged.

He returned again on Feb. 11, 1914, for the same condition. The treatment was again instituted and after four doses of emetin, 1 grain daily, it was discontinued as amebas were no longer found. After the first dose his bowels did not move but when they did move after the third dose there was no blood. On passing the tube three days after the last dose of emetin the presence of a few red blood-corpuscles caused the treatment to be begun again. Though no amebas were found he was given 5 grains of emetin in six days, one day being omitted through error. The tube was passed regularly after this and no further positive or suspicious findings were made. His mother took the patient away, after he had contracted a slight bronchitis on March 2, 1914, before he was discharged.

Since the last attack, which was treated under more favorable conditions than the previous ones, the patient remained well up to a report of one week before this was written.

Case 4.—M. R., white male, 8 5/12 years old, native of Louisiana and resident of Donaldsonville, La., was brought to my clinic at Touro Infirmary, May 26, 1914, for frequent stools containing blood.

He is the fifth child of eight, all of whom are healthy, as are the parents. His mother had four miscarriages and one stillbirth. An aunt died of tuberculosis five years ago. He was a full-term child of normal delivery and was breast fed for three months, after which he was given the bottle with milk and sweetened water.

Aside from the present illness he had never been sick. He usually drank cistern water and never well water. Three years ago a short time after eating of peanuts he passed much gas and later blood appeared in his stools. There were intervals when the dysentery would be much better, but recently he had become much worse. During the attacks he had much pain in his abdomen and strained a great deal at stool. The pain was more severe during the first three months of the illness. He had never had much fever. Four physicians were consulted at various times but none had ever made the diagnosis. One advised bringing him to the hospital. His mother thought that he was gradually becoming worse. He had never been confined to bed before he was admitted on May 26, 1914.

His stools were large, brown and contained mucus and blood. The tube was passed, amebas found and emetin, 1 grain, given. In all he was given 2 grains of emetin by needle after which the amebas were no longer found and the blood stopped. The tube was passed every day for four days after the first negative finding, then two days later with the same result. He was given castor-oil twice and magnesium sulphate twice and no amebas were found on passing the tube following the administration of the purgatives. Not much time has elapsed since this case was first treated but the patient is improving nicely.

DISCUSSION

Case 1 came from a district low and swampy and is of interest from a diagnostic point of view and because of the age of the patient.

Case 2 was given 3⅔ grains emetin in four days. There was no blood after the second dose of emetin and no amebas were found after the fourth dose of emetin. This case is of especial interest because of the small amount of medication used; the prompt effect of the emetin in a case of such long duration (8 months); and the results of the treatment, eleven months having elapsed with no return of the illness.

Case 3 cannot be considered a fair test of any treatment, because (1) the first two attacks were treated without rest owing to the refusal of the parents to permit the patient to be admitted into the hospital; (2) the first two treatments were not completed; (3) during the third attack the patient was not kept in bed, and just at the time he should have been more closely observed, he deserted; (4) the fourth attack may have been due to no rest; and because (5) of the lack of intelligence and cooperation on the part of the parents, who gave the child all sorts of food when visiting him.

It must be borne in mind that there is a possibility of reinfection in this case, especially when the hygiene and habits (which were unfavorable) of the patient are considered.

The vomiting must be mentioned, as it is possible, though hardly probable, that the emetin alone caused it, because he did not vomit after each dose.

This case is of particular interest because of the relapses which may be accounted for as already mentioned. Also because it demonstrates the promptness of the effect of emetin in controlling the symptoms and the harmlessness of its large and continued dosage, and of its ultimate effect in the treatment.

It is too early yet to venture much in Case 4; suffice it to say, however, that the prompt effect of emetin was again demonstrated, since after the administration of 2 grains of emetin given in two days the blood disappeared and no amebas were found in the stools, and the effect was so prompt in a case of such long standing, (3 years).

All three patients were given 1 grain doses of emetin hypodermatically, and though it might be considered a large dose, no harmful effects resulted even in Case 3, in which the patient was given the drug on so many occasions and during one attack 5 grains in six days.

From the study of the foregoing cases and the literature I believe that emetin is the specific for amebic dysentery. There are some observers who have recorded cases treated satisfactorily and which have remained cured. There are others who have not reported such satisfactory results.

In the foregoing cases the effect of emetin was spectacular. After its administration the blood in the stools disappeared as if by magic; the amebas were soon no longer found, the stools were promptly diminished in frequency, and there was a tendency toward checking the bowels altogether and giving the necessary rest. Is there anything more to be desired? Undoubtedly it is the drug for children with amebic dysentery, as it may be given to them while quite young, its effect is rapid, and there are no disadvantages experienced as in endeavoring to have the child swallow ipecac pills or the inconvenience and struggle incident to colonic irrigation, and its effect is certain.

Maison Blanche Building.

ABSTRACT OF DISCUSSION

DR. THOMAS S. SOUTHWORTH, New York: We of the North are prone to look on amebic dysentery as a matter of warm climates and the tropics. We see few cases, even in adults, unless the persons have been in some other portion of the country. Yet I doubt whether cases of dysentery have been sufficiently investigated for the presence of the ameba. Last summer I had an opportunity of seeing a woman of nearly 80 who had traveled only between Ohio and Maine, yet she had amebic dysentery which was promptly checked by the use of emetin hypodermatically. In these days when so much of our garden produce and fruit comes to us from the southern states, it is perfectly possible that the origin of this infection can be brought to us, and we should be more on the outlook for these cases in children. I believe we shall find more of them if we are watchful.

DR. HENRY DWIGHT CHAPIN, New York: This disease does occur rarely in New York. Every year we have one or two cases in the babies' ward of the Post Graduate Hospital. These patients have not been out of New York. Perhaps the disease is more common than we think, and we have not looked with sufficient diligence for the ameba.

DR. J. W. AMESSE, Denver: Any contribution to our knowledge of amebic dysentery should be welcomed, not only by this Section, but by the entire Association. It was a matter of common observation and comment among those who served in the Philippines during the early days of our occupation, that while amebic dysentery in adults was the *bête noire* of our daily life, few if any cases were found in children. I believe there is a relative age immunity to this disease, as there is to yellow fever, just as we find a relative race immunity among certain peoples to typhoid, hookworm disease, etc. So far as emetin is concerned, reports from every quarter warrant us in asserting that this powerful remedy is a specific for amebiasis comparable with quinin in malaria and antitoxin in diphtheria. I have seen amazing results follow its use in the practice of a colleague. Soldiers and civilians invalided home years ago and suffering periodic recrudescences of dysentery, have become practically transformed, and have again taken up their work as productive members of society.

DR. W. W. BUTTERWORTH, New Orleans: The amebas in this country are wide-spread and not confined to the South. Neither are all amebas pathogenic. It is only when we have recurring attacks of dysentery, bloody mucus and straining, which pass away in a few days if not treated, to recur again, that our attention is called to the pathogenic amebic dysentery. Therein lies the important diagnostic point between pathogenic amebic dysentery and ordinary dysentery. I had an interesting experience in New Orleans, with a soldier who returned from the Philippines. He had barely escaped death in those islands; he was a married man, with a family of four children, the youngest of whom was 13 months old. This child was partially breast-fed. It was found to have amebic dysentery. Two of his other children, his wife and himself suffered from the same disease. It seems fairly reasonable that the infection occurred through the person of this returned soldier. I heartily concur in the value of emetin. It is the best agent we have in the treatment of this disease. Treatment by ipecac and flushing is most distressing and most annoying, and is frequently foregone by the patient. They will not subject themselves or their child to such a treatment. Emetin is far and away the best treatment we have of this condition.

Farmers Being Paid for Milk on Score-Card Basis.—For the past year or two the larger milk companies selling milk in this city have purchased milk from dairy farmers on the score-card basis. In general the contract provides for a premium of 10 cents per hundredweight for a score above 68, particular attention being given to methods of operation. That this is an effective incentive to the dairy farmer to produce milk according to modern standards is not open to question.—*Weekly Bull. Dept Health, City of New York.*

A YEAR'S EXPERIENCE WITH CONTAGIOUS-DISEASE NURSES*

WM. H. PRICE, M.D.
DETROIT

This paper assumes as established the fact that the taking of wholesome ways and reasonable precautions for the benefit of the public health may be expected to result in the prevention of disease, a healthier community, and more efficient individuals with lengthened lives. The truth of such a statement has come to be a matter of common knowledge. If evidence of it were needed, however, it is available in abundance, as witnessed by those spectacular sanitary reforms with which the world, lay as well as professional, is familiar.

With the prospect of such a reward, of disease prevented, dependents and public charges eliminated, and individual and community resources conserved, it is a source of wonderment that the preventable waste of disease and physical deficiencies continues to be endured. The explanation can only be in a lack of appreciation of these facts by laymen, by many physicians, and especially by those having in charge the appropriation of the public funds, when the principle of disease prevention is applied to their own household or community. It has therefore followed in natural sequence that education of the public has come to be a fundamental recourse for all activities having for their aim the protection and promotion of the public health. Some authorities even go so far as to state that efficient health measures are 80 per cent. educational.

Control of contagious disease is a rudimentary principle to be observed by all authorized public-health agencies. There are two reasons for this:

First, the problems of the control of communicable diseases are reduced to scientific exactness, and therefore greater results may be expected from the time, money and effort expended.

Secondly, public education regarding the possibility and advisability of reducing these diseases has progressed to such a point that the public demands their suppression as a prerequisite to the granting of further support, both moral and financial, for measures directed at more obscure diseases and defects in which all progressive health departments are interested, namely, housing, occupational, industrial and hereditary.

When, therefore, we embark on any program for the protection of the public health, it follows as a natural corollary that the suppression of contagious diseases is a prime requisite, and that the method of personal education directed at the known foci of infection is of greatest importance.

Previous to July 1, 1913, the following custom prevailed in Detroit relative to contagious diseases: The house was placarded immediately after the disease was reported. The next day a quarantine inspector visited the premises; his mission was to furnish fuel and groceries in needful cases, and to warn isolated persons against breaking quarantine. He called again as time and necessity indicated, and at the termination of the illness disinfected the house and removed the placard. Three inspectors were so employed at a salary of $1,000 per year each. They were faithful,

* Read before the Section on Preventive Medicine and Public Health at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

reliable men with no pretense of hygienic training. Release cultures for diphtheria were taken by the tuberculosis nurses, thus involving a duplication of work by health-board employees.

July 1, 1913, the quarantine inspection service was discontinued. Twelve contagious-disease nurses were appointed; tuberculosis, being a contagious disease, is included within the scope of their activities. These nurses are graduates and registered, or qualified for registration, and are each paid $1,000 per year. Districts are assigned according to density of population and facilities for transportation. A case of communicable disease being reported, the house is placarded, as formerly, by the police department. The same day, or at latest the next morning, a nurse visits the premies. A certain proportion of the patients go to the hospital, whereupon she immediately disinfects the house. Otherwise, she determines the advisability of isolating one room to permit the wage-earner to work and sleep at home. A card type history of the case and family is made out. Grocery supplies are furnished if necessary. The nurse's real mission, however, is to read over with the quarantined family the prophylactic literature published by the health board, which is similar to that furnished by other cities, referring to the particular disease in question, and also to give a practical demonstration of its application. Typhoid fever is a typical example. The nurse carries a half-pound can of chlorid of lime, a 6-ounce bottle of phenol (carbolic acid) and mosquito netting. A jug, a crock or other receptacle of two gallons' capacity is found and the chlorid is dissolved in two gallons of water, a basin of the solution is prepared and placed ready for the attendant's hands, disinfection of stools and urine are explained in detail, the phenol is made into a 5 per cent. solution with 1 gallon of water for disinfection of bedclothes and body linen. Antityphoid vaccination is urged. The windows and door of the sick-room are screened with mosquito netting, free if necessary. Return visits are made frequently and the supply of disinfectants is renewed. Account is kept of milk bottles to see that none are diverted to improper uses.

If subsequent infections take place in the family or neighborhood through the medium of flies or otherwise, it seems reasonable to assume that this must now be due to the wilfulness of the afflicted household. On termination of the illness, the house is disinfected by the same nurse.

Similar routine, varying with the character of the disease, applies to small-pox, diphtheria and scarlet fever. Perhaps a majority of the scarlet-fever cases are not seen by the doctor after the first week. At the end of the minimum period of quarantine it is the custom for the parent to call up the physician and notify him of that fact. He thereupon reports the patient as recovered. As a result of the careful examination of the patient before release, the average period of quarantine has been materially lengthened. The development of additional cases in the household is better reported.

Diphtheria cultures, both from schoolchildren, for release, and from suspicious cases at the request of physicians, are satisfactorily taken by the nurses. Reports are also returned to the main office of the progress of the illness and of the quantity of antitoxin used, thereby enabling the health officer to suggest, as diplomatically as possible, to the attending physician that doses of 2,000, 3,000 and 4,000 units for curative purposes are entirely inadequate and well calculated to perpetuate the disease and raise the death rate.

Objections on the part of the profession and the public to this system have been few and entirely out of proportion to the commendation it has received. The few objections have proceeded from two sources: First, the tradition on the part of certain physicians that disease is an individual affair of physician and patient. Such a contention is manifestly false. Contagious disease especially is not the personal affair of the individual, household or profession—the public is as much interested.

Secondly, there is a natural disposition on the part of the household to pump the nurse, as well as gossip with the neighbors and quiz the physician with the resulting information. Few practitioners have escaped the irritation of uncomplimentary remarks attributed to friends or other physicians before the introduction of the contagious-disease nurse, and in a few instances the nurses have been accused of talking too much. The nurse's training fits her perhaps better than any other individual to accomplish her purpose without suspicion of preempting the physician's field.

The following is a report of the contagious-disease situation in Detroit for the months of January, February, March, April and May, 1913, preceding the introduction of the contagious-disease-nurse system, as compared with the corresponding period in 1914, when that system was fully established:

COMPARISON OF FIRST FIVE MONTHS OF 1913 WITH SAME PERIOD IN 1914, WITH REGARD TO DEATHS FROM CONTAGIOUS DISEASES

	Deaths		Reduction in 1914	Percentage of Reduction in 1914
	1913	1914		
Diphtheria	128	71	57	44
Scarlet fever	89	27	62	70
Typhoid fever	53	19	34	64

It is not sought to establish the conclusion that the contagious-disease nurse is alone responsible for the reduction shown above. The conclusion is drawn that she is a most valuable field agent of the health officer and the one best calculated to instil into the minds of quarantined persons the necessity for the taking of wholesome ways and reasonable preventive precautions. Also that the acquisition of obvious sanitary information by such persons is of the greatest importance in safeguarding the public health for two reasons; first, every infected person is a possible or even probable source of subsequent infections which should be guarded against at their source, and the attending physician has not as yet given sufficient attention to imparting this information; secondly, quarantined persons of the present will constitute themselves the professed authorities of the future in matters relating to communicable disease, and it is of the greatest importance that their views be definite and correct.

Board of Health Building.

Pathology.—Pathologic anatomy which in other fields of pathology yields fundamental conceptions even on naked-eye inspection, in the case of mental diseases can neither provide clear data for clinical application nor be itself established without minute and painstaking microscopical research. And very often the latter demonstrates to us, in agreement with experimental data, that certain slight and transient influences, though not going the length of imprinting any sign of their passage on even such a delicate structure as the anatomical network, are still capable of inducing very grave functional disturbance.—Lugaro, Problems in Psychiatry.

CEREBELLAR SYMPTOMS AND CEREBELLAR LOCALIZATION

INCLUDING KINEMATOGRAPHIC OBSERVATIONS ON CEREBELLAR PHENOMENA *

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PHILADELPHIA

RECENT ADVANCES IN CEREBELLAR SYMPTOMATOLOGY

In recent years, and especially under the lead of Babinski and Rothmann, some features of the old cerebellar symptomatology have come to be looked on in a different light and some of the symptoms regarded as elementary have been subjected to considerable dissection. The so-called cerebellar ataxia, now regarded as a symptom complex rather than as a pure symptom, has been more clearly differentiated from the ataxia of tabetics. Luciani's astasia, asthenia and atonia are acquiring a new interpretation.

Our studies emphasize the fact that asynergy is the fundamental symptom of cerebellar disease.

Cerebellar tremor and the new symptoms, hypermetry and adiadokocinesis, all now recognized as important cerebellar disorders, when reduced to their symptomatic elements, are seen to be dependent in large part if not entirely on loss or disturbance in the power of performing more or less complex movements together for the accomplishment of a definite end.

Luciani's asthenia, atonia and astasia are to be regarded not so much as special manifestations of asynergy as derivatives or resultants of asynergic effort. Asthenia is due to the exhaustion which results from efforts to perform movements which cannot be properly grouped and directed. Cerebellar atonia, which is very irregular in its expression, is a relaxation dependent on the fact that tonectic stimuli from the cerebral cortex cannot rhythmically combine with unsynergized movements. Primarily, tone is a cerebral, not a cerebellar attribute.

Attention may be fixed on the views just expressed by the following tabular statement:

Fundamental Symptom in Cerebellar Disease:
Asynergy.
Special Symptomatic Manifestations of Asynergy:
Hypermetry.
Adiadokocinesis.
Tremor.
Symptoms Resulting from Asynergic Efforts:
Asthenia.
Atonia.
Ataxia.

Whether vertigo and nystagmus, which are so often present in disease of the cerebellum, are ever true cerebellar symptoms is a question which has been much discussed. From the time of Flourens' early experiments, physiologists and clinicians have concerned themselves with the relations between labyrinthine or vestibular nerve phenomena, and those dependent on pure cerebellar activity. Comparisons and parallels have been drawn and the extraordinary similarity in some instances and even the identity between the results of experiments on the vestibular nerve apparatus and the cerebellum have been shown by many competent investigators. The decision whether vertigo and nystagmus are cerebellar or vestibular symptoms must be largely determined by a thorough study of each case.

From the position of the cerebellum and its peduncles, the cranial nerves and particularly those from the fifth to the twelfth are frequently implicated in cerebellar affections, the complex resulting being compounded of true cerebellar symptoms and those referable to such of these nerves as may be involved. To this type of case Stewart and Holmes have given the name of "extracerebellar." The well-known and much-studied affections of the cerebellopontile angle belong in this category, although extracerebellar symptoms are not limited to the phenomena of lesions of this angle.

Besides the cranial nerves, the nuclei and the tracts of the neuraxis are not infrequently invaded in cerebellar lesions, and we have still another combination of symptoms, cerebelloneuraxial, which requires close scrutiny in the process of diagnosis.

The clinician is indebted to Babinski for the fixation of his attention on cerebellar asynergy. Ferrier, however, recognized the fact that synergic control was the particular rôle of the cerebellum. Discussing the mechanism of cerebellar coordination and the relative development of the cerebellum, he says:[1]

> Every form of active muscular exertion necessitates the simultaneous cooperation of an immense assemblage of synergic movements throughout the body to secure steadiness and maintain the general equilibrium; and on the hypothesis that the cerebellum is the center of these unconscious adjustments we would expect the cerebellum to be developed in proportion to the variety and complexity of the motor activities of which the animal is capable. The facts of comparative anatomy and development are entirely in harmony with this hypothesis.

Synergy or synergia is the power or faculty by which movements more or less complex, but functionally definite, are associated in a special act or acts. In a broad sense it is motor association, this association being carried out in movements of different parts of the same limb or in synchronous movements of the trunk and limbs, or of the head and trunk and limbs, etc.

Movements are mismeasured, giving dysmetry or hypermetry because the patient with cerebellar disease is unable motorially to associate the different elements of such movements. Adiadokocinesis, as illustrated for example by the impossibility of correctly and rapidly pronating and supinating the hand on the forearm, is due fundamentally to the inability to carry out fine motor associations of an antagonistic kind.

The method usually employed in clinical study or class instruction of demonstrating hypermetry is the well-known finger-to-nose test; for adiadokocinesis, partly flexing the forearm or forearms on the elbow and then rapidly pronating and supinating the hand, the movement being largely one from the wrist. Adiadokocinesis and hypermetry are both demonstrated by the rapid pronation and supination of the hand on the

* Read before the Section on Nervous and Mental Diseases at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

* On account of lack of space this paper has been abbreviated for THE JOURNAL. It will appear in full in the Transactions of the Section and in the authors' reprints.

1. Ferrier, David: Functions of the Brain, Ed. 2, 1883, p. 200.

knee. Tremor is exemplified by the finger-to-nose test and by efforts to grasp an object or by writing. Hypermetry is shown by the finger which usually is able to touch the end of the nose overshooting to one side, or in the hand-knee test by the hand not keeping within the normal range of movement.

The phases of asynergy described as dysmetry or hypermetry are discoverable, however, in cerebellar cases in the abnormal attitude or movements of the head, in the bending of the trunk, in the abduction, sprawling, overstepping or understepping in walking, in the spreading of the limbs in standing and in much else that is done by the patient, and these dysmetric phenomena are frequently accompanied by tremor and adiadokocinesis, all of which are well defined in kinematographic observations.

KINEMATOGRAPHIC OBSERVATIONS

Our kinematographic investigations indicate the necessity of some revision of views both as regards the methods of describing and the intrinsic characteristics of cerebellar symptoms. Some new points in cerebellar symptomatology were elicited by these investigations.

The *gait* of a cerebellar patient in the majority of cases is chiefly trunkal. The trunk may go backward, or forward, forward and to one side, or simply to one side. The inclination may be total or partial. In every attempt on the part of the patient to walk, for example, the trunk from the first leans backward, forward or to one side, it being impossible for him to stand for any length of time in the erect posture. He may be able, however, for a short time to stand erect, or to walk either with the trunk erect or leaning, but even when this is possible he is likely soon to lurch forward or backward or to one side. In this type of case the movement of the trunk is predominant and forms the most impressive part of the picture, the legs seeming to act simply as props for the trunk. The trunk leads, and whatever way it goes, the legs follow. If, for example, the trunk leans forward and to the left, the swing of the left leg is shorter than that of the right, or if the trunk goes forward and to the right, the swing of the right leg is less than that of the left, the legs accommodating themselves to the movements of the trunk.

Our observations on pelvic girdle and shoulder girdle movements in locomotion, both when the patient is standing and when on all fours, are especially instructive. In some of the cases the asynergy is just as marked in the shoulder girdle as in the pelvic girdle. In those cases, however, in which the asynergy is more marked in the pelvic girdle, even if both girdles are affected, the gait is entirely different. Here the legs are held farther apart and the arms are nearly always held partly outstretched and semiflexed at the elbows. If the asynergy is shown alone in the pelvic girdle movements, the trunk assumes a different relation to the legs than in the cases just described. Here the trunk is held rigidly erect and the legs are pushed forward from the pelvis, giving the impression that the trunk goes after the legs. In the extreme pelvic girdle cases, it is impossible for the patient to walk without help, but when assisted, the trunk is very rigid, the legs being thrown out in almost any direction.

The cerebellar gait is often described as drunken or reeling, but from our observations, the gait is not like that of one who is drunk. A drunken man will reel in any direction, but he does this largely because of his mental, that is, of his cerebral reduction. A slightly drunken man simply reels forward or to one side, while one who is very drunk is unable even to stand up and any attempt on his part to do so brings on a sort of crumpling of the whole body. In such attempts the legs give way and the man falls because of this and not because his trunk forced him in a given direction. Besides, there is no attempt on the part of a drunken person to hold his arms outstretched for protection, whereas, the cerebellar patient is always careful as to how he walks, and knowing that he tends to stagger, makes efforts to obviate this and assumes as far as he can protective positions. He not only uses his cerebrum, which is largely out of commission in the case of the drunken man, but he even compensates in some degree for his cerebellar impairment by the forced or overuse of his cerebrum.

As has already been mentioned, when a cerebellar patient walks, the whole trunk may be projected in a given direction or one shoulder or one side may be moved more than the other, as for example, when a patient walks forward and to the left, in which case the left shoulder and left trunk are forward, the right side of the body lagging. The same thing will be true no matter what other position the body assumes, as when the patient changes to a sitting or standing from a recumbent posture. If the case is left-sided, then the left shoulder and trunk move first and more than the right; if right-sided, the right shoulder and trunk are more in the picture. If the case is bilateral or central, that is entirely trunkal, no difference in the movement of either side is detectable.

In the pelvic girdle cases when the patient attempts to get up from a recumbent posture and temporarily assumes in doing this a position on his hands and feet, the sway of the pelvis is very marked and may be chiefly to one side, but is nearly always to both sides. It is noticeable that in this position, the taking of which is one of the best methods of showing the relative degrees of pelvic girdle and shoulder girdle asynergy, if the pelvis only is involved, the trunk will not sway and whatever trunkal movements are present, are compensatory. These cases are much more common than those of the shoulder girdle. The methods thus indicated of demonstrating pelvic girdle and shoulder girdle asynergy have not, we think, been described before.

Turning now to some of our observations regarding *the movements of the limbs,* we are convinced that in testing for hypermetry, for example, it does not matter very much whether the finger goes beyond the nose, for many patients because of being repeatedly asked to do this learn to put their fingers to their noses quite well. The important thing is that if there is an asynergy of the upper limb when the patient attempts to place his finger to his nose, the movement being of wide range as when it starts with the hand on the knee, the whole arm including the shoulder takes part in the movement. The circle described by the hand is greater than it should be and in the majority of cases the movement is quicker than normal, although in some it is the contrary. In some cases when the patient is asked to put his finger to his nose the arm is swung inward; in some cases, outward and in some directly to the nose. The more marked the dysmetry the greater is the tendency for the sweep to be inward, that is, toward the body, and the greater is the involvement of the shoulder.

In testing hypermetry in the legs, if the patient is in a recumbent position and asked to put his heels to his knees or his heel to any point indicated, there is first an overflexion of the thigh on the abdomen and the heel nearly always overshoots the desired point. The nearer the pelvis is the point to be touched, the greater the sway of the leg, but the heel is usually placed on the desired point.

An equally good way to test hypermetry is by asking the patient to put the heel to the buttock. In this the movement is nearly always quick, the thighs are much more flexed on the abdomen than they should be and in the height of the excursion, with the heel approximating the buttock, there is always a to-and-fro sway of the limb, the degree of this depending on the severity of the symptom.

In testing for adiadokocinesis the attempts at alternate pronation and supination of the forearm and hand quickly show the degree of asynergy of the limbs. Adiadokocinesis may be tested in the lower limbs as well as the upper by alternate rotations or adductions and abductions. The defect is readily observed. The excessive movement may be either inward, outward, upward or downward in the upper limb and inward or outward in the lower limb. This is best brought out if only one side is involved, for then it is possible to compare the movements with those of the limbs of the other side. In some cases the movements are slow, but the important thing to look for is the overmovement.

In a case recently placed on record by one of us there was a *loss of emotional expression* on the right side of the face although the patient could use this side for every other purpose. The loss of emotional expression, while evident to ordinary observation, was emphasized by the kinematograph. In other cases, as for example, in paralysis agitans, disseminated sclerosis and focal lesions of the pons, we have been able to study changes in emotional expression more thoroughly than by the ordinary clinical method.

Not only can unilateral loss of emotional expression be exhibited, but a loss of all or almost all expression. One of our patients who could not be made to laugh or cry talked in a slow, monotonous, stupid manner with drooling of saliva. The moving pictures show not only the loss of emotional expression, but also the manner of speech. It is interesting that in this patient the movements of the limbs and body are of the same character as those of speech.

We believe in a true *cerebellar speech*, one type of which is shown in the patient described above. In another case which was for a long time in the nervous wards of the Philadelphia General Hospital the history was such as to indicate that the patient had had a hemorrhage into the anterosuperior portion of his cerebellum. He had most exquisite asynergy in his tongue, facial and laryngeal movements. His speech might be described as jerky and crackling. In this patient and in one other whom we recall, not only was the speech affected in the manner described, but mastication and deglutition were almost impossible because of the asynergy of the involved musculature.

In most of our cases examined kinematographically there were no asynergic *movements of the head and neck*. The head in these cases usually maintains the same plane as the trunk. In one case, however, shown in the series of pictures, the head is carried distinctly to one side. While the cases seemed to be relatively limited the fact that we have had a few speaks for the localization of movements of articulation, phonation, mastication and deglutition.

So far as our kinematographic observations are concerned, we showed, in one case, previously mentioned, of cerebellar agenesis, what we regard as true *asynergia of the eyeballs*. The eyes are never at rest. They move upward, downward, to either side, and in a rotary direction and combined, with the nodding of the head, give a furtive appearance, as if the patient were constantly dodging something. No two successive movements of the eyeballs are alike and it is with difficulty that the movements can be followed with the naked eye, although with the kinematograph this becomes easy.

In one of our patients vertical nystagmus was always present, and this occurred no matter in what direction the patient attempted to look. We believe because of the symptomatology that this patient had a lesion of the upper cervical cord and inferior cerebellar peduncles. We regard the nystagmus as due to involvement of the vestibulocerebellar apparatus, probably of the parts connecting the vestibular nuclei with the deep nuclei of the cerebellum.

In one of our patients in whom an exposure of the cerebellum was made, the cerebellum was incised to about the depth of half an inch at about the junction of the left superior semilunar lobe with the vermis. Directly after the operation and ever since, marked lateral jerkings of both eyeballs have been constant, but these have been more marked on the left. If the patient looks to the right the nystagmic movements are not so forcible, but on looking to the left they are strikingly exhibited. It is not that the left eyeball moves without the right, but that the excursion in the left eye is more marked than in the right and gives one the impression that the left eyeball alone is moving. It will be remembered that the incision was on the left. As these movements were not present before the operation it is apparent that they were the direct result of the incision into the cerebellum.

Babinski has described catalepsy as a new cerebellar symptom. In demonstrating this the patient is placed on his back, the thighs semiflexed on the abdomen, the legs on the thighs. After a few oscillations, according to Babinski, the legs become stationary and maintain their position for a longer than normal period. These phenomena in one patient were shown by Babinski by means of a moving picture at a meeting of the International Congress, 1913.

We found that most of our patients were too asynergic and asthenic to maintain their legs in the above-described position for more than a few moments. In other patients in whom the asynergy was not so marked, and particularly in the unilateral cases, we tested both the upper and lower limbs at the same time. The upper limbs in this test were first placed in a vertically extended position. The limbs on the affected side slowly drooped and reached the level of the body sooner than those of the unaffected side. In not a single patient did we find true catalepsy and we therefore do not look on it as a manifestation of pure cerebellar disease. In one of our patients, a very powerful man, one of our chief illustrations in the series of moving pictures, the man placed on his back was able to maintain his legs and arms in a set position—that of semiflexion of the lower limbs and vertical extension of the upper—but in this case there was no preliminary swaying and we regard the exhibition as pseudocataleptic and simply due to the great

strength of the individual. The case was one in which the asynergic phenomena were expressed bilaterally, although the abnormal movements were more marked on the left and especially in the pelvic girdle.

CEREBELLAR LOCALIZATION—FOCAL SYMPTOMATOLOGY

In studying the focal symptomatology of cerebellar disease, hypermetry, adiadokocinesis and tremor at times indicate not only the presence of cerebellar asynergy, but give the clue to the part of the cerebellum most involved, as when these phenomena are most markedly exhibited in a special part of the body —the trunk, the upper or lower extremity, the head, face or eyes. These facts of localization are, we believe, emphasized by kinematographic investigations, as we have just tried to show.

The clinician soon finds that the focal symptomatology of cerebellar disease is not so easily comprehended as cerebral focal symptomatology. He recalls, however, from his experience, observations which have a bearing on this question. He has had cerebellar cases with marked unilaterality in their manifestations, indicating that one-half of this organ exerts its influence with marked predominance on one side of the body. In other cases, not on the whole numerous, ocular movements have been disordered in a way not explicable by limited lesions of parts of the brain other than cerebellum. In other instances, also not numerous, the speech of the patient is affected in a manner not to be explained merely by bulbar or cerebral involvement, while in many instances both ocular movements and speech disturbances are wanting. He has noted that in different cerebellar patients the disordered movements of the trunk differ from each other in ways which can be definitely discriminated. Shoulder girdle movements in one instance, and pelvic girdle movements in another, are more affected. The changes in emotional expression sometimes observed differ in different cases. The head takes a special attitude in a few cases; in many others this not occurring. Extraordinary combinations of abnormalities of movement may be discoverable on casual observation or elaborate investigation.

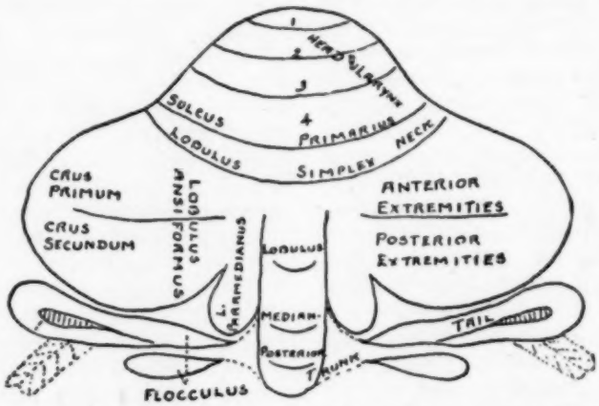

Fig. 1.—Bolk's schema of the mammalian cerebellum; on the left half the new anatomic names; on the right half the functions of special areas (Von Bechterew).

The cerebellum as a whole and all of its parts are concerned with the function of synergia. When, however, a particular part or parts of the body are the seat of abnormal motor phenomena of cerebellar origin, such manifestations are focal and more or less capable of localization. If these focal symptoms were arranged in tabular form, we would have a list something like the following:

Focal Symptoms Indicated by Localized Asynergic Movements:

Eye movements.
Attitude and movements of head.
Movements of jaw, face, tongue, larynx, etc.
(Disturbances of speech, emotional expression, etc.).
Position and movements of trunk.
Special movements of upper extremity.
(Disturbances in fine movements including writing).
Movements of trunk and upper extremity (shoulder-girdle movements).
Special movements of lower extremity.
Movements of trunk and lower extremity (pelvic-girdle movements).

CEREBELLAR LOCALIZATION—COMPARATIVE ANATOMY AND EXPERIMENTATION

Some of the results of embryologic and morphologic investigation of mammalian cerebella indicate the development and elaboration of function in this organ. Among those who have contributed work of great value in this direction we find some of the most distinguished names in the field of neuro-anatomy: Kölliker, Schwalbe, Elliot Smith, Bolk, Van Rynberk, Charnock Bradley and others. To the results of the investigations of some of these, Rothmann has appealed in corroboration of his own experimental and pathologic findings.

Studying the mammalian cerebellum from the lowest types to man, certain facts of paramount interest regarding the development of fissures, folia, lobules and lobes attract attention. The methods in which fissures appear, extend, recede and disappear and the horizontal and sagittal expansion of cerebellar substance go hand in hand, as in the development of the cerebrum with additions and intensifications of function.

In the lower mammals like the squirrel, the ox, the dog and the monkey, the cerebellum has a less marked subdivision into a middle lobe and lateral lobes than in man. Such subdivision appears and becomes more definite as the evolutionary series approaches man. Glancing, for example, at the dorsal aspect of a series of the cerebella of apes or their semidiagrammatic representation as given by Bolk, one deep somewhat anterior fissure usually called the *sulcus primarius* is uniformly observed traversing the entire width of the cerebellum, while above and below this are distinct fissures shallower and of varying lateral extent, only one, much more posterior than the primary fissure mentioned above, crossing the full width of the cerebellum. In the cerebella of these animals a vermis of moderate extent is distinctly to be seen in the posterior region of the cerebellum. In *Lemur albifrons* the deep transverse fissure is seen with shallower fissures anterior and posterior to it. In its posterior median portion is a well-defined middle lobe, to the right and left of which are lobes traversed by a short fissure with radiations. This intercrural fissure separates two crura or limbs of a cerebellar lobe, the *crus primum* and *crus secundum*. Many of the references to the experiments on lower animals, as on dogs and monkeys, are to the effects produced by extirpation or irritation of these parts.

Bolk, Elliot Smith and Bradley have made schema of the mammalian cerebellum. Von Bechterew adapted the schema of Bolk so as to give a general view of the functions of the cerebellum (Fig. 1).

It is in the parts homologous in the human brain with the *crus primum* and its correlated vermis that the highly evolved synergic movements of the upper extremity and trunk appear to be represented, and in the *crus secundum* and its correlated median and paramedian regions the highly developed synergic movements of the lower extremity and trunk, those especially concerned with the maintenance of the erect position of man and his ability to perform complex synergic movements in this position.

In the anterior portion of the human cerebellum as in lower mammalia, movements more or less common to both them and to man—movements of the eyes, head, jaws, face and larynx—are represented, although this representation in man is of higher synergies than in lower animals. This anterior lobe is to be regarded more as a whole—as transverse or azygos—without so much reference to a separation into middle and lateral parts as has hitherto been considered essential, although the superior vermis and its wings may have subdivisions of their general representation.

The demand for a complex representation of movements which are complex and elaborate has led to the tremendous development in man of that subdivision of the cerebellum which is posterior to the primary fissure.

The localization of cerebellar function and the abnormal phenomena produced by limited cerebellar lesions have been chiefly investigated by extirpation and electrical irritation. The extirpation experiments have been of varying character, sometimes decapsulation of a whole lateral lobe or of this and the vermis or of the vermis alone; and sometimes by extirpation of small areas in definite parts of the cerebellum as in the anterior lobe, in the *crus primum*, *crus secundum*, the posteriomedian lobe or inferior vermis, or the paramedian region.

The electrical-excitation experiments have been performed on carefully selected spots and areas of the cerebellar cortex and some observers have endeavored to isolate their irritation experiments to the deep nuclei of the cerebellum. We are in accord with Rothmann in our belief that the cerebellar cortex is excitable to the electric current, a fact which was long ago demonstrated by Ferrier and which we have confirmed in one case on a human subject. A stronger or longer-continued current seems to be required to bring about movements in the case of the cerebellar cortex than in that of the cerebral cortex, but such excitation is possible and can be more or less circumscribed.

In another communication, reviewing the neurologic contributions to the Seventeenth International Congress, one of us[2] has summarized the findings indicating special localizations by recent cerebellar experimentalists (Rothman, Prus, Adamkiewicz, Pagano, Bolk, Van Rynberk, Luna, Katzenstein and Rothmann, Bárány, and others). It is not always easy or perhaps possible to homologize the parts isolated in experiments on lower animals with divisions and subdivisions of the human cerebellum, and clinical contributions supported by necropsies have not yet been sufficiently numerous and exact to furnish absolutely dependable corroborations of the work in experimental physiology. Based on our studies of the literature of cerebellar embryology, comparative anatomy, experimentation and clinicopathology and on the results of our direct and kinematographic clinical observations, these studies in a few instances being reinforced by operations and necropsies, we have attempted a tentative schema of localization in the human cerebellar cortex (Figs. 2 and 3). It must be understood that this is regarded by us not only as tentative, but in some particulars as merely suggestive. One cannot with the same accuracy and certainty as in the case of the cerebral cortex indicate this or that region of the cerebellar cortex as exclusively concerned with the movements of the eyes, head, face, jaws, trunk, extremities or special parts of the limbs. The important fact that the cerebellum as a whole and in subdivision is concerned with synergy indicates that movements in which various parts of the body are at the same time concerned cannot be fully represented by a center or area for movements of one of these parts. The eyes may move to the right or left, or up or down without any association with other movements, but on the other hand, the eyes may move synergically with the head or with the head and trunk or with the head and trunk and limbs. The trunk may be bent forward or backward or twisted to the right or left with little or no association with movements of the extremities, but such comparatively simple trunkal movements are not the rule in bodily actions. The rôle played by the cerebellum has its best exemplifications in such acts as advancing and retiring in the erect position or in the performance of complex movements

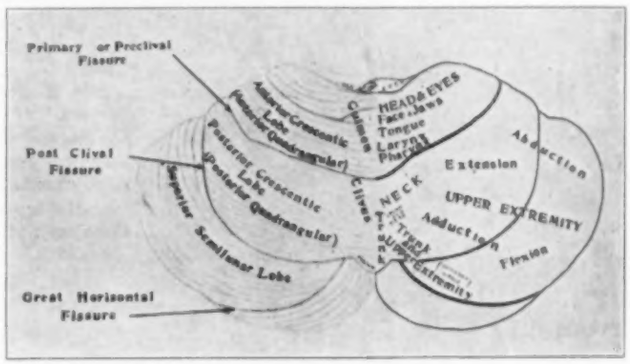

Fig. 2.—Cerebellar localization; zones and centers of the superior surface of the cerebellum.

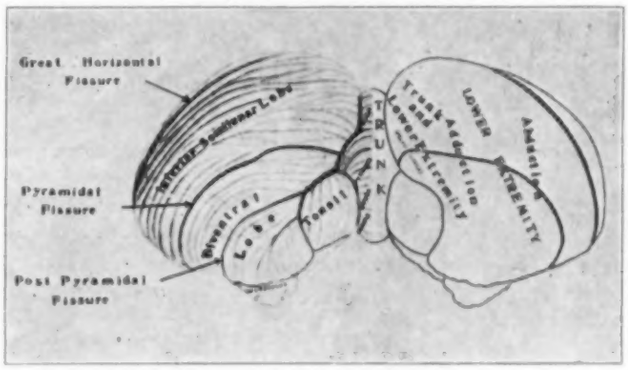

Fig. 3.—Cerebellar localization; zones and centers of the inferior surface of the cerebellum.

2. Mills, C. K.: Neurology at the Recent (Seventeenth) International Congress of Medicine, New York Med. Jour., 1914, xlix, No. 5.

while standing, as in fencing, boxing or public speaking; or in the driving and regulating while sitting of the movements of a rapidly running automobile; or in any highly trained movements such as are exhibited in a series ascending in complexity and rapidity of association from a game of tennis or baseball to the handling of an aeroplane. These wonderful representations of instantaneous synergic activity must be represented in the cerebellum by complexly associated neural mechanisms. In other words, cerebellar localization is more compound in its cortical representation than is cerebral localization. A composite, however, has always within it factors or elements which can to a less or greater extent be separated from the entire mass.

In the human cerebellum we must be able to recognize, in the first place, centers for synergically simple movements and in the second place, centers and zones for more and more complex synergic movements. Each simple synergic movements has, however, its special cortical representation.

To illustrate the principles just expounded let us refer to some of the results of experimentation and the difficulty of applying these in ordinary clinical work, at the same time showing that this application is possible. Bolk found a center for bilateral movements of the anterior limbs in the *crus primum* and a similar center for the posterior extremities in the *crus secundum*. A destructive lesion of one of the homologous parts in the human cerebellum would not give us the same simple clinical picture as the lesion of deficit in the dog, this being due, at least in part, to the fact that the dog ordinarily uses all four limbs in station and progression while man step by step with the development of his cerebellum has learned to stand erect and walk and guide his movements chiefly by the motor adjustments between his lower limbs and trunk, the upper limbs acting as auxiliaries in such performances. The aberrant movement resulting from localized deficit or irritation in the case of a man would be more complex, a combination, for instance, of an abnormal shoulder girdle or pelvic girdle movement with specialized dysmetric movements of parts of the limbs. The fact that the representation in certain parts of each hemisphere may be homolateral, contralateral or bilateral makes it more difficult to draw an inference or reach a conclusion as to the localization of function and therefore, of course, as to the results of focal lesions.

How then shall we apply the known facts of cerebellar localization in neurologic diagnosis? Simply by bearing in mind that when the trunkal movements and those movements of the limbs which must act with them to preserve static and dynamic equilibrium are affected, the vermis must be involved in whole or in part. The associated involvement of one lateral lobe in the vermal lesion will be largely determined by unilateral dysmetric phenomena, the extent of the anteroposterior involvement of the inferior vermis by the preponderance of asynergy in either the lower or the upper limbs. In our kinematographic studies the presence of abnormal pelvic girdle movements in one case and of abnormal shoulder girdle movements in another, these symptoms being sometimes more marked on one side than the other, seems to us to give the key to the localization of the lesions both as regards their anteroposterior and lateral positions.

1909 Chestnut Street.—2030 Chestnut Street.

ABSTRACT OF DISCUSSION

Dr. Harvey Cushing, Boston: I can see the large opportunities this demonstration offers for study and analysis of the motor disturbances in these cerebellar cases. I recently saw some remarkable cinematographs of athletes in motion which had been taken with great rapidity, I think 250 exposures to the second instead of the usual number. When they were shown the reel was slowed sixteen times, so that the films passed very slowly and yet without fluttering. The opportunity of analyzing the movements was most unusual. With such improvements in the technic of taking and exhibiting films we may look forward to the future study of the motor disturbances of disease with the expectation of valuable returns. It has been a great help to me, being only an amateur neurologist, to have Dr. Mills assemble, so simply and clearly, the confusing terms relating to cerebellar incoordination. If we can accept asynergy itself as the underlying factor in the motor disturbances with which we are familiar it will greatly simplify the subject for all of us. So far as the caloric and other tests are concerned, interesting as they are from a physiologic point of view, I am sorry to say that for clinical purposes we have not as yet benefited greatly from them. We have religiously gone through these tests in all of our cerebellar cases before as well as after operation and have made as complete studies as th epatients' condition permitted. I have visited Bárány myself and one of my associates has been with him for some time, but I must acknowledge that so far we have not profited by these studies of the cerebellolabyrinthine pathway. Nevertheless, I think they should be made as a routine part of a neurologic diagnosis if there is any suggestion of temporal lobe, of labyrinthine or of cerebellar involvement; and I still hope, purely from the practical point of view, that we may in time gain something of value, even if we cannot expect to secure from the labyrinth information comparable to that which we get from the eye.

Dr. Otfrid Foerster, Breslau, Germany: I believe that all so-called cerebellar phenomena are only different signs of one elementary symptom, for which I will use the term "incoordination," instead of asynergy. I think it means a little more than asynergy. It is simply a question of examination.

The moving pictures are of great value, not only for demonstration, but also for investigative purposes. Patients often show a certain symptom at one moment and later do not show it. The moving pictures allow us to fix the symptom and to examine it as often as we like in a careful, detailed and analytic way.

Dr. Charles K. Mills, Philadelphia: It has been said that we should study more closely than we usually do the part of the body affected. More than this, we should note what part of the body is first affected, what second, and what last, in this way ascertaining the train of phenomena which leads us to the original focus of disease. A common thing for the neurologist to do in a case of cerebral tumor is to study its progressive symptomatology. He notes the occurrence of not only the initial symptom if the patient has a spasmodic attack, but also the serial order of phenomena; if, for instance, the spasm begins in the face, then goes to the leg or arm. If he has a case of parietal tumor he studies first the easily recognized parietal symptoms and then, perhaps, follows the successive phases of changes in the reflexes. I have seen, for instance, the normal plantar reflex change to a stationary position of the great toe and then to extension of this toe. In cerebellar disease—abscess, tumor, and, more rarely, hemorrhage—we can sometimes most readily get the clue by a study of the progressive order of development of the phenomena in the limbs or part affected.

The Death-Rate a Measure of Intelligence.—If the principles of sanitation, as we now understand them, were put into practice, within fifteen years the average life would increase to 65 years. . . . The death-rate to-day is the measure of intelligence.—Victor C. Vaughan, *Journal Michigan State Medical Society*.

CARCINOMA, SYPHILIS, AND TUBERCULOSIS COEXISTENT IN THE SAME PATIENT

WITH REPORT OF A CASE

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The occurrence of active tuberculosis with carcinoma or of carcinoma with syphilis in the same patient is occasionally observed. We find reported in the literature many cases of lupus associated with epithelioma, and also of pulmonary tuberculosis with cancer involving the same, or some other organ, as the stomach, intestine, or liver. Much more infrequently do we see cases of carcinoma and syphilis in the one individual. The majority of these are patients in whom a malignant growth occurred at the site of leukoplakial patches. Cancer associated with syphilitic lesions of the central nervous system is not of common occurrence. The association, however, of carcinoma, tuberculosis and syphilis, each involving primarily a different organ in the same patient is apparently extremely rare. Such an occurrence is not mentioned in any of the standard works on pathology or carcinoma, and a careful search through the literature has failed to reveal a single recorded instance of a combination of these three diseases. Therefore, the following case, in which all three conditions were demonstrated during life and confirmed at the postmortem examination, is thought to be of sufficient interest to place on record.

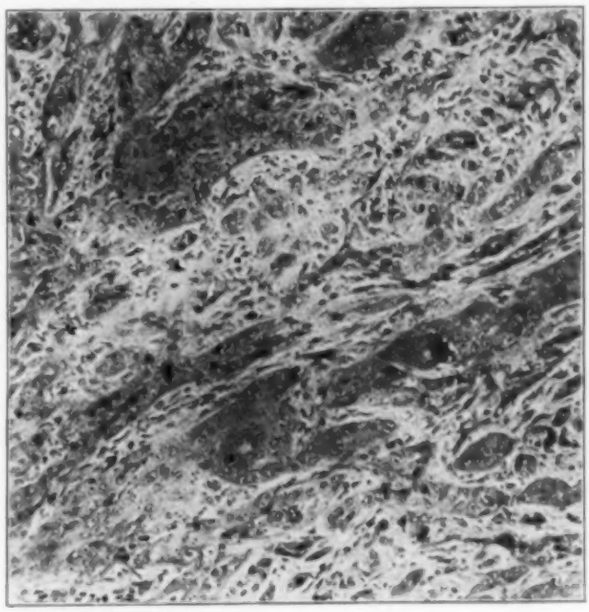

Fig. 1.—Section of tumor in pharynx. From a photomicrograph (×135).

REPORT OF CASE

Mrs. O. M. J. (Case No. C. 1. 13. 44) aged 39, housewife, born in Ireland, was referred by Dr. N. Faxon of Stoughton to the Huntington Memorial Hospital, Sept. 27, 1913, complaining chiefly of difficulty in swallowing.

Present Illness.—In July, 1910, shortly after her first confinement, patient noticed that her knees became weak. She was able to stand and walk, but had great difficulty in going up or down stairs. This condition persisted until after her second confinement in September, 1912, when she became troubled by a "sort of numb, tired feeling" in the back of her head. This came on when she sat up for the first time after parturition, lasted for three months, and then passed into the spine and rectum, where there was severe pain, frequently during the entire day. Two months ago her throat began to "fill up" and she was unable to swallow. Local treatments by a specialist afforded temporary relief. Patient states that she occasionally has chills. For the past six months she has been nauseated in the morning, but seldom vomits. Has had cough and expectoration for the past two months. Her appetite was very good until the throat symptoms appeared. Bowels have been regular, no bladder symptoms. She has lost greatly in weight.

Past History.—Patient had measles, mumps and whooping-cough during childhood, typhoid fever and malaria in later life. Menstrual history is negative, except that the periods ceased after her first injection of salvarsan. She married at the age of 33 and had two children, both alive and well, one instrumental and the other a normal delivery. Does not use alcohol and denies venereal history.

Family History.—The patient's father died of blood-poisoning, but no information was afforded concerning recent injury or other cause. Mother died of asthma. Has one sister who is alive and well. No history of tuberculosis or tumor in the family.

Physical Examination.—The patient is a slightly built, emaciated, white female adult of brunette type. The skin and mucous membranes are pale. The forehead is prominent, the nose slightly depressed. The pupils are moderately contracted and react to accommodation, but not to light. The tongue protrudes mesially, and is red at the tip and margins. The papillae are prominent. The upper teeth are false. The pharynx is deeply injected and on the posterior wall above the level of the epiglottis is seen a rounded elevated nodule approximately 0.5 cm. in diameter. Beneath this, and extending downward to the left as far as the eye can see, is an ulcer, irregular in outline, and with elevated edges. The base is covered with a grayish-yellow discharge and projecting masses of reddish tissue can be seen. On the right side of the neck, beneath the ear, is an oval-shaped firm mass 3 by 2 cm. It is adherent to the tissues beneath it. The cervical lymph-nodes are readily palpable.

The thorax is symmetrical; the ribs, clavicles and sternum are prominent. Tactile fremitus is increased over the left chest. The area of cardiac dulness is within normal limits. The apex is heard best in the fifth interspace, 8 cm. from the midsternal line. The sounds are normal. The respiratory sounds are increased throughout the chest, particularly on the left side. Posteriorly, they are bronchovesicular in character and an occasional dry râle is heard.

The abdomen is depressed, linea albicantes are present. There is no increase in the area of hepatic or splenic dulness. The kidneys are both palpable, the right somewhat movable. The inguinal lymph-nodes are readily palpable.

The knee-jerks are absent. There is no ankle-clonus, no Babinski, although the right toe is slightly suggestive. Plantar reflexes are present. The umbilical reflex is absent. The patient cannot walk unassisted. The gait is spastic and the foot is brought down flatly. The toes point outward. On standing still, she sways slightly and on closing the eyes, topples over. The pulse is rapid, regular, of low tension and vessel-wall soft.

July 19, blood-serum was obtained for a Wassermann test by her physician, Dr. N. Faxon, and a positive report was returned. July 21, 0.4 gm. of salvarsan was given intravenously and on August 15, 0.6 gm. of neosalvarsan. She reacted strongly to these injections with chills and increased temperature. The administration of potassium iodid was then begun and continued up to the time of her entrance into the hospital.

Oct. 1, 1913, a fragment of tissue removed from the throat was reported carcinoma. A Wassermann test on the blood-serum was negative. A roentgenogram of the chest showed a picture consistent with pulmonary tuberculosis. Soon afterward, acid-fast bacilli, morphologically tubercle bacilli, in large numbers were found in the sputum. Her blood-pressure varied from 80 to 95 (Tycos). The urine was not remarkable. The blood on entrance contained 12,200 white

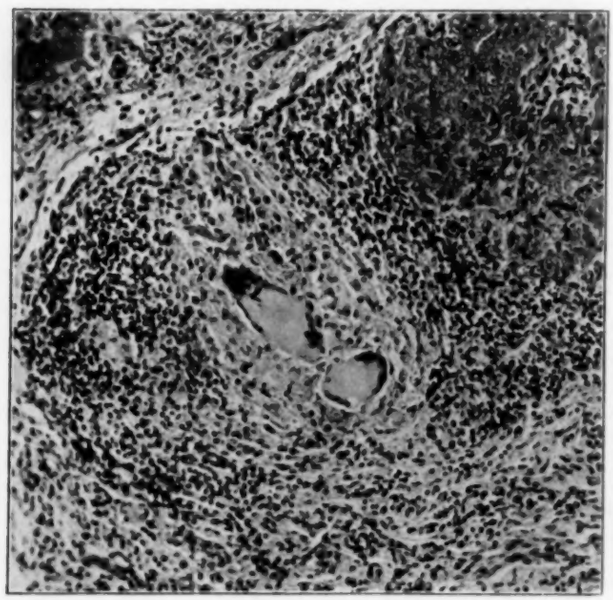

Fig. 2.—Section of tumor and tuberculous tissue from right side of neck. From a photomicrograph (×135).

cells, 5,300,000 red cells and 90 per cent. hemoglobin. Later the white blood-cells rose to 16,800 and on October 28 dropped to 10,200 and hemoglobin to 80 per cent.

During the first part of her stay in the hospital, she improved slightly, after which her condition became progressively worse. The pulse varied between 120 and 130, the respiration from 30 to 36. The temperature ranged from 98 F. a. m. to 102 F. p. m., occasionally being so low as 97 F. in the morning and reaching 103 F. in the afternoon. Death occurred Nov. 13, 1913, preceded by several days of great weakness, increased difficulty in swallowing and cyanosis.

Post-Mortem Examination (by Drs. E. E. Tyzzer and E. Kellert).—Body length, 157 cm. Body is that of a woman, slender, well developed and markedly emaciated. Rigor mortis is present. There is a moderate degree of lividity over the posterior aspect of the body. At the anal orifice is a mass of reddish tissue 1 cm. in diameter covered with epithelium. There is a very slight degree of edema about the ankles. The outer aspect of the forearm shows a rounded scar measuring 1 cm. in diameter. The chest is depressed on both sides near the upper sternal region and the sternum shows marked bulging outward.

Peritoneal Cavity: Abdominal wall measures 3 or 4 mm. in thickness. The peritoneum is smooth. There are adhesions between the lower surface of the spleen and the transverse colon. The abdominal viscera are displaced downward. The transverse colon extends into the pelvis and is bent S-shaped on itself. The appendix is negative.

Pleural Cavities: There are numerous adhesions over the entire surface of the right lung. The left pleural cavity contains approximately 50 c.c. of yellowish-red fluid.

Heart: Weight, 240 gm. The myocardium is normal in color and consistency. The mitral valve presents several firm and non-calcified thickenings at the free edge. The coronaries are normal. The intima of the ascending aorta is smooth and without lesion.

Lungs: They are voluminous and do not collapse when chest is opened. In the posterior portion of the right lung are numerous small nodules of opaque tissue measuring 2 mm. in diameter. The smaller ones are slightly translucent. At the apex is a cavity 5 by 4 by 3 cm., which contains a thick grayish mucopurulent material. The walls are smooth and contain irregular branching bridges and trabeculae. The inferior left lobe presents, on cross-section, nodules similar to those above described. Many of these nodules are confluent and form irregular masses of opaque grayish tissue. The bronchial lymph-nodes are deeply pigmented and non-calcified.

Gastro-Intestinal Tract: In the median portion of the small intestine are two ulcerations of rounded outline. The larger measures 2 cm. in transverse diameter and 1.5 cm. longitudinally. The mucosa at the edge is elevated and irregular. On the serous surface of the intestine are minute translucent areas. The stomach and large intestine are negative.

Spleen: Weight, 118 gm. The capsule shows very minute translucent elevations. Cut surface is light-red. The trabeculae are prominent and the follicles indistinguishable. Several opaque nodules, some measuring over 1 mm. in diameter, are present.

Pancreas: Normal in size, color and consistency.

Liver: Weight, 1,180 gm. The capsule is smooth. Cut surface is of a dull chocolate-brown; the markings are not prominent. At one point there is an opalescent mass 3 mm. in diameter. The gall-bladder and bile-ducts are negative.

Adrenals: Normal in appearance.

Kidneys: Combined weight, 250 gm. The capsule strips readily, exposing a slightly torn surface. The medulla is redder than the cortex, which is pale brownish-red.

Bladder: At the neck of the bladder is an area containing greatly dilated blood-vessels and producing a bluish-red discoloration. The genitalia are not remarkable.

Aorta: Smooth appearance throughout. The retroperitoneal mesenteric lymph-glands are considerably enlarged and reddened and, in some of these, opaque areas are to be seen.

Organs of Neck: In the posterior and left lateral wall of the pharynx is an ulceration measuring 4 by 3.5 cm. The base is irregular and covered with a pale grayish exudate mingled with reddish granular elevations. Lower down, there is a small rounded mass 0.7 by 0.5 cm. and elevated 0.3 cm., also smaller translucent nodules from 2 to 4 mm. in diameter.

Bone-Marrow: Dark brownish-red and moderately firm in consistency.

Head: The frontal eminence and occipital protuberance are unusually prominent. The anterior portion of the calvarium is normal, but somewhat thick posteriorly. The base of the skull is negative.

Brain and Cord: Report by department of neuropathology No. N.-13-96. The brain weighs 1,324 gm. It is generally brachycephalic in type. The pia of the vertex is cloudy, and the pial vessels considerably injected throughout. The convolutions are fairly simple in pattern. There is no gaping of the sulci and no gross cortical lesions. The vessels of the circle of Willis show very slight stiffening, but no atheroma. One centimeter frontal section through the cerebrum and cerebellum show the corona radiata small in area. No gross lesions, except a suggestion of slight sclerosis of the arteries of the lenticular nuclei. The cord, on gross inspection, shows yellowing of the posterior columns. Sections from the cervical, dorsal and lumbar levels of the cord show a marked degeneration of the columns of Goll and Burdach. The process is more marked in the lower than in the cervical region. The posterior roots appearing in the section are almost entirely unstained. The blood-vessels, especially the arteries, show considerable thickening, particularly of the intima. There is slight loss of cells in the column of Clark. The lesion is typical of tabes dorsalis.

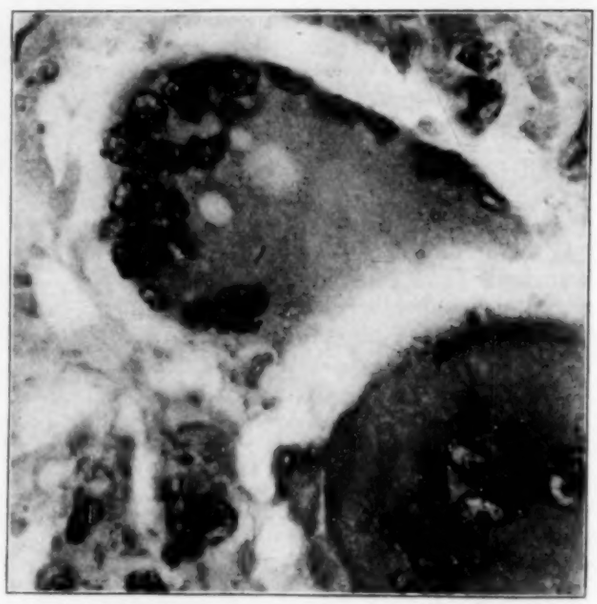

Fig. 3.—Section from tubercle shown in Figure 2. From a photomicrograph (× 1,000). Note giant cell containing tubercle bacilli.

Anatomic Diagnoses: Pulmonary tuberculosis with cavity formation; carcinoma of pharynx with metastasis to cervical lymph-node; tuberculous pleuritis with effusions; tuberculosis of lymph-node; tuberculosis of pharynx; edema of lungs; tabes dorsalis; tuberculous ulcers of small intestine; marked emaciation; external hemorrhoid; slight edema of feet.

Histology.—Pharyngeal Ulceration: Sections show an ulcerated surface covered with necrotic tissue, fibrin and bacteria. Directly beneath the ulcer are large closely packed masses of tumor epithelium which extend inward, where the tumor appears to be subdivided into smaller masses or isolated cells surrounded by dense fibrous tissue. In many

of the larger masses are foci composed of pink-stained, swollen epithelial cells which are evidently necrotic. The tumor cells are large, irregularly rounded or polyhedral in shape and present a moderate amount of faint pink-staining cytoplasm. The nuclei vary considerably in size and shape but in general are large, rounded, vesicular and show one or more nucleoli or chromatic masses. Mitotic figures are present, but not numerous. The stroma appears, for the most part, dense in character and presents spindle-shaped connective-tissue cells, rare eosinophil and lymphoid cells. Blood-filled capillaries are numerous.

Enlarged Cervical Lymph-Node: A layer of tumor tissue is found enclosing the caseous interior of the mass and the whole more or less encapsulated. The capsule consists of dense fibrous and fat tissue containing nerves. Between the capsule and layer of tumor tissue is a narrow margin of lymphoidal tissue, dilated lymphatic spaces and areas of tuberculous tissue. The lymph spaces are surrounded by a supporting tissue containing but few cells. The tumor epithelium is closely associated with the tubercles, but there is no admixture of the two. The tubercles are distributed over the outer surface of the tumor tissue. Acid-fast bacilli are present.

Heart: The muscle fibers contain a moderate amount of brownish pigment situated about the nucleus.

Aorta: There is a diffuse thickening of the intima, but no calcareous deposits.

Lung: There are extensive areas of edema and caseation and many tubercles, both miliary and confluent. Some of the larger areas are surrounded by a thick connective-tissue capsule containing tuberculous tissue, frequently with giant cells. There is no calcification present. The alveoli surrounding the tuberculous tissue are filled with masses of fibrin and desquamated endothelial cells. There are numerous acid-fast bacilli present.

Small Intestine: The ulcerations involve the entire thickness of the intestinal wall. The superficial layers are composed entirely of necrotic and inflammatory tissue. Beneath this are tubercles and fragments of smooth muscle. There are very few giant cells present. The capillaries are dilated and filled with red blood-cells. Large numbers of acid-fast bacilli are present.

Liver: The hepatic cells about the central veins are in various stages of degeneration. Many are necrotic or absent. There are numerous polymorphonuclear leukocytes present. About the periphery of these areas of necrosis are columns of normal-appearing liver cells and there is a moderate degree of replacement of the hepatic tissue with fat. The sinusoids in the necrotic portions are dilated with blood-cells. There are large numbers of small tubercular areas scattered throughout the parenchyma.

Spleen: A few similar tubercles are present.

Kidney: There is a slight degree of degeneration of the tubular epithelium, and a few of the tubules contain casts.

Uterus: An occasional small blood-vessel in the myometrium shows hyaline changes, and there is moderate atrophy of the endometrium.

Lymph-Nodes: Miliary tubercles are present. The sinuses are frequently dilated and filled with desquamated endothelial cells, some of which are phagocytic for red blood-cells.

Bone-Marrow: It is not remarkable.

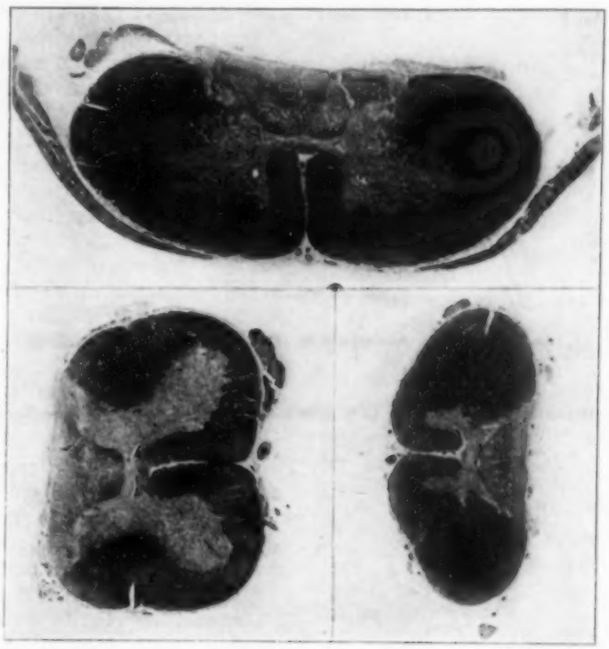

Fig. 4.—Section of spinal cord at varying levels showing degeneration of posterior columns. From a photomicrograph (× 6).

This patient, therefore, presented three distinct diseases, each involving primarily, though not confined to, a different organ—an invasive tumor primary in the pharynx with metastasis to a cervical lymph-node; an extensive bilateral pulmonary tuberculosis, and tabes dorsalis. The lesions are typical for each of these three, any one of which would ordinarily be regarded as a major disease. The origin of the syphilitic infection is somewhat obscure. The patient, an intelligent woman, most emphatically denied a venereal history. She had given birth to two normal and healthy children and did not have a miscarriage or abortion. It is stated in the family history that her father died of blood-poisoning, but further details could not be obtained. The peculiar shape of the head, the prominent frontal region, and the somewhat depressed bridge of the nose, slightly suggest congenital syphilis.

Although comparatively few cases of combined carcinoma and tuberculosis have been reported, it is doubtful if there exists between them any antagonism. Thus Bastedo,[1] who gives an excellent review of the literature, finds that there is no specific favoritism or antagonism between the two diseases; that cancer is more common among those with latent tuberculosis than among those at the cancer period of life. The common age for cancer is not the age for active tuberculosis. Moak,[2] in looking over the records of the Bender Hygienic Laboratory, found carcinoma present in 6.6 per cent. of active tuberculous cases. This percentage is rather higher than that of other observers. Lubarsch[3] found cancer present in 4.4 per cent. of active tuberculosis, and McCaskey[4] in 1.4 per cent. The latter notes that retrogression of cancer has occurred after the injection of tuberculin. Patients dying of cancer not infrequently show old scars or calcification in the apices, indicating healed tuberculosis.

An occasional observation has been made in which it was thought that a tuberculous ulcer preceded a malignant growth. Such cases have been reported, but observations of the combined conditions, cancer and tuberculosis, as of the hand (Lapeyre[5]), esophagus (Weyeneth[6]), (Corduo[7]), larynx (Beale[8]), and intestine (Dixon, Smith and Fox[9]), have been more common. Lupus and carcinoma are frequently associated, but the pathologic processes involved, in which groups of epithelial cells are isolated by the "frequent cicatrizations, place these lesions in a class by themselves" according to Bastedo.[1]

Certain observers have concluded that the tubercle bacillus and its toxins are concerned in the etiology of cancer, but the relationship is not clearly demonstrated. Dixon, Smith, and Fox,[9] after animal experimentation, convinced themselves that the tubercle bacillus and its products could stimulate epithelial structures. While it is true that an epithelial hyper-

1. Bastedo, W. A.: The Association of Cancer and Tuberculosis, Med. News, 1904, p. 1165.
2. Moak, H.: On the Occurrence of Carcinoma and Tuberculosis in the Same Organ or Tissue, Jour. Med. Research, June, 1902, p. 129.
3. Lubarsch: Krebs und Tuberculose, Virchows Arch. f. path. Anat., 1888, cxi.
4. McCaskey, G. W.: The Clinical Association of Cancer and Tuberculosis with Report of a Case, Am. Jour. Med. Sc., July, 1902.
5. Lapeyre, N.: Tuberculosis Plus Cancer on Back of Hand, Presse méd., April 11, 1914.
6. Weyeneth: Carcinoma und Tuberculose des Oesophagus, Dissert. Zurich, 1900.
7. Corduo: Ein Fall von Krebsig—tuberculosem, Geschwür der Oesophagus, Arb. a. d. path. Inst., der Universitat Göttingen, 1893, p. 147.
8. Beale: Cancer ou tuberculose du poumon, Jour. Laryngol., 1896, p. 36.
9. Dixon, Smith and Fox: On Cancer and Tuberculosis, Penn. Health Bull., Harrisburg, 1911, No. 24.

plasia can be brought about by the tubercle bacillus and its products, yet there is no evidence to show that it can produce an invasive tumor. If this were true, we should expect to find cancer much more frequently associated with tuberculosis, and more common at an earlier age. Roger Williams[10] pointed out that as cancer increased, phthisis decreased.

Syphilis is a fairly common disease and yet its combination with carcinoma is exceedingly rare. This is indicated in the statistics gathered by Williams. He mentions the case of Turenne, who syphilized his recently operated cases, hoping thereby to prevent a recurrence of the growth. Lang,[11] on the other hand, claims to have observed syphilitic infiltrations which became converted into malignant neoplasms. He believes that the toxins of syphilis may weaken the organism which is more readily attacked by tumor growth. He also believes that cutaneous syphilitic infiltrations form a favorable soil for tubercle bacilli. We have found relatively few cancer patients who give a specific history, and Wassermann tests on their blood-serum but seldom give a positive reaction. This has been our experience at the Huntington Hospital, although varying percentages have been claimed at different clinics. Fox[12] reports a large series of cases with negative reactions. Many cases occur in which a malignant growth appears to have its origin in areas of leukoplakia.

It is always of interest to determine which lesion appeared first, and its influence on the development of subsequent affections, but only too often this is impossible. In the present case, it is apparent that the syphilitic infection must have occurred long before the active development of the other two conditions. The phthisis must have been a comparatively recent infection, for the history of loss of weight dated back but a few months. Throat symptoms developed about three months before death, so that the tumor was probably the last of the three diseases to appear.

Cases already reported and this one bring up the question of the occurrence of two or more active diseases in the same patient. We are inclined to think that it is to be found much more frequently than is commonly suspected. Thus typhoid and tuberculosis in combination are not uncommonly observed. Osler[13] found at necropsy, tuberculous lesions in 5 per cent. of typhoid cases. Yellow fever, dengue, malaria and amebiasis frequently coexist, so that individuals may harbor any two of the above infections. Recently, Strong, Tyzzer, and others[14] separated into two distinct diseases, oroya fever and verruca peruana, which had long been accepted as different manifestations of a single infection. It is not at all improbable that, in the tropics, many patients suffer from two and even three diseases. A short time ago a postmortem examination at this hospital in a case of myelogenous leukemia revealed also a tuberculous peritonitis with ascites. While the student is usually taught to make one diagnosis cover all the symptoms, the possibility of one or two other conditions being present must not be overlooked. In fact, it is unscientific not to consider the presence of more than one disease if the signs and symptoms indicate it.

In conclusion I wish to thank Dr. A. E. Taft for a thorough examination of the central nervous system and acknowledge my indebtedness to Dr. E. E. Tyzzer for assistance in the pathologic examination and report of the case.

10. Williams, Roger: Twentieth Century Practice of Medicine, New York, William Wood & Co.
11. Lang, E.: Twentieth Century Practice of Medicine, New York, William Wood & Co.
12. Fox, F. J.: Wassermann Reaction in Cancer, Med. Rec., New York, Aug. 16, 1913.
13. Osler, W.: Practice of Medicine, New York, D. Appleton & Co.
14. Strong, Richard P.; Tyzzer, E. E.; Brues, Charles T.; Sellards, A. W., and Gastiaburo, J. C.: Verruca Peruana, Oroya Fever and Uta, THE JOURNAL A. M. A., Nov. 8, 1913, p. 1713.

THE RECONSTRUCTION OF THE NASAL SEPTUM AFTER THE SUBMUCOUS OPERATION*

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The reconstruction of the nasal septum after the submucous operation invites, first, a discussion from both the physiologic and the anatomic standpoint of the etiologic factors of nasal disturbance for which septal relief is indicated, and justification of the selection of surgical interference in the septum rather than other parts of the rhinopharyngeal tract; second, the adoption of surgical measures which will reasonably overcome the nasal disturbance with the least traumatic modification, and, third, the reestablishment of normal function in the part itself and the correction of the disturbed specialized function to which its displacement has contributed.

Succinctly stated, the consideration devolves on the three questions: For what may submucous resection be legitimately done? How can it most safely and simply be performed? How perfectly may the septum be reconstructed? Such reconstruction must include the anatomic rebuilding of a structure virtually razed to its foundation, the physiologic continuance of its general and specialized function and, finally, the relief in satisfactory measure from the conditions for which it was instituted.

The new partition must enable the septum to perform its part in the secretory, olfactory and respiratory activity of the nose, be anatomically strong enough to withstand reasonable subsequent trauma, preserve the alignment of the external nares and resist unfortunate sequelae.

Interesting results were reported by Anderson[1] from animal experimentation in obstructing the upper respiratory tract, proving that nasal obstruction leads to death or serious modification of vitality. It furthermore produces lowered resistance, predisposition to infection, local disease of the respiratory tract and associated cardiac, skin and pulmonary symptoms. He even produced asthma symptoms in the lower animals and found that reopening of the nose relieved them.

Consideration of this topic has been induced by a rather careful analysis of the procedures and subsequent results of about five hundred complete and partial submucous resections which I have performed, and by the rather fortunate opportunity, as will be later explained, of having obtained a septum specimen by secondary operation in which surgical and physiologic points of interest resulting from primary interference were well exhibited.

Obstinate catarrh, the neuroses of hay-fever or asthma, nasal stuffiness, eustachian tinnitus and sinus pressure are classical symptoms for which orthopedic correction of a deflected or nodular septum might be

* Read before the Section on Laryngology, Otology and Rhinology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.
1. Anderson: Proc. A. L. R. and O., 1909.

indicated. Here the personal equation of the specialist's examination must be severely eliminated, nor must the operator be influenced by the readiness and skill of his own preference for this operation. Surgeons subconsciously allow their minds to become focused on certain types of work, and it is difficult to escape the influence of this in their operative advice. The delicate decision as to the possibility of restoration in a middle turbinate showing early degeneration may frequently be the determining decision as to an operation on it or on the encroaching septum. A careful review of the physiology of these areas would indicate a preference for septal rather than turbinate interference.

Mentzenbaum[2] is of the opinion that the exenteration of the turbinate destroys an important vitalizing organ in the nose, but the splendid work of Mosher and others need not be discussed here.

Phillips[3] classifies cause of septal deformities as due to congenital malformations, arrested or excessive development of the facial bones and traumatic injury, with large majority in the latter, and quotes the importance of the progressive changes due to unrecognized childhood traumatism. It is doubtless due to the insidious development of such disturbance that the many conditions indicating septum operation are suddenly revealed and apparently almost spontaneously.

As Emerson says,[4] the patient consults not for the deflection, but for the conditions which have produced unequal ingress of air, hypertrophies, contact, insufficient drainage or active infection of the sinuses of the nasopharynx. He further enumerates asthma, headaches, aprosexia, disturbance of vision, aggressive otitis media, erysipelas from the infection of the erosions, eczema of lip, recurrent bronchitis, chronic nasal pharyngitis, redness of nose, aphonia, perversion of smell and taste, dyspepsia, mechanical obstruction and catarrh as symptomatic of septal deformity.

Fig. 1.—The most common type of deviation of the septum, presenting a common result of unrecognized traumatism.

To this might be added Bryant's[5] conclusions that epileptic seizures are more often due to reflex stimulus from the Schneiderian membrane to the fifth nerve than from other causes.

A most frequent indication for careful examination of the upper nasal cavity is a simple, indefinable stuffiness in that area, subjecting the patient to varying degrees of discomfort. Though indefinable, its degree of oppression is in sharp contrast to the unmeasured relief by removal of its cause. In a minor percentage of cases, hay-fever and asthma are relieved and occasionally entirely overcome if the obstruction be a sharp bulge or ridge constantly irritating the middle turbinate. Frontal and ethmoidal sinusitus, especially in those cases with recurrent attacks, have sometimes been eradicated by the correction of a markedly deformed septum. Hay-fever and asthmatic seizures, always problematic in prognosis, sometimes permanently change, and a most encouraging picture is seen in the return of normal luster to the mucous membrane.

As cited by Ballenger,[6] an irregularity of the septum *per se* should not indicate a submucous operation. The obstructive and irritative conditions present, combined with the symptoms enumerated above and obviously connected therewith, render the situation clear, though with one's tendency to become subconsciously focused in a certain type of work, possibly only a complete examination by an "all-around non-operative specialist"—if such hypothesis be possible—should determine in certain cases whether interference with the septum or the turbinate would be the more justifiable.

It is justifiable to associate ordinary postnasal catarrh with deformities in this area, especially those without adenoids, but with ridge, spur or deflection. Here must be carefully analyzed evidence of atrophic mucous membrane change, as the too-wide nasal cavity is one of dread. It might be suggested here that a careful subsequent review of patients some time after the septum operation should be instituted for possible sequelae of this sort.

A certain number of cases present a symptomatology of general defective metabolism—the stasis of gouty diathesis, sallow skin, foul breath and coated membranes. If these be associated with poor aeration of the upper respiratory passages, the obstructed nares may be a positive factor.

Richardson[7] has reviewed the connection of upper respiratory disturbance as a reflex of general body condition, counseling against undue haste for operation and early attention to dietary and hygienic reorganization, while Meyer reports treatment of ninety-three cases of nasal vasomotor disturbance by topical application for relief of dysmenorrhea.

Favorable result of septum replacement has been the experience of many of us in the relief of eustachian tinnitus, especially that associated with a posterior exostosis or hook-like projection of the vomer. The rationale of these improvements has been analyzed by many investigators, Leland[8] urging the freeing of the fossae of Rosenmüller of synechial or isolated patches of lymphoidal tissue at the onset of earache, and Norval Pierce,[9] carrying the investigation further into the physical and physiologic factors involved in the diminished tympanic cavity, retraction and atrophic condition of the drum with ankylosis at the foot of the stapes. Changes in blood-supply with hyperemia and rarefaction of air explain the situation here and make septal replacement one of the positive elements in physiologic reconstruction.

Relief of eustachian catarrh and remodeling of the air-current with freedom through the tract of the pharyngeal tonsil area is a particularly favorable result. If we accept the theory suggested by Dr. Randall that the adenoid tonsil may be increased by

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3. Phillips: Diseases of the Ear, Nose and Throat.
4. Emerson, Francis P.: The Results of the Operation of Submucous Resection of the Septum in Private Practice, THE JOURNAL A. M. A., Oct. 22, 1910, p. 1449.
5. Bryant, Med. Rec., New York, 1907; Boston Med. and Surg. Jour., 1911.
6. Ballenger: Diseases of the Ear, Nose and Throat.
7. Richardson, Charles W.: Some Suggestions in the Methods of Correcting Deflection of the Nasal Septum, THE JOURNAL A. M. A., Sept. 21, 1912, p. 1131; Proc. A. L. R. and O., 1913.
8. Leland: Laryngoscope, 1909.
9. Pierce, Norval: Laryngoscope, 1909.

obstructed nares, as well as the reverse, the change in rôle sometimes becomes explainable.

The extensive relation of the septal tract with eye affections forces a close connection of ophthalmologic and rhinologic fields. Hilcher[10] quotes a varied field of optic conditions—rebellious headache with eye pains, accommodative asthenopia with neuroretinitis, catarrhal conjunctivitis, recurring phlyctenular keratitis and dacryocystitis—as indicating an examination for

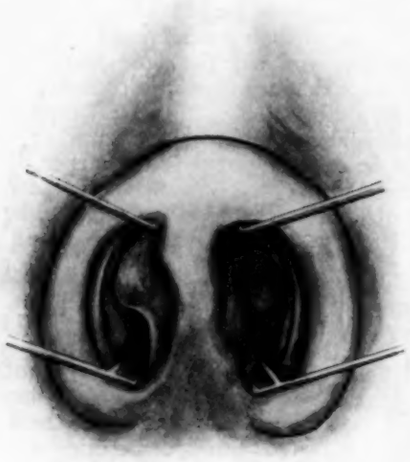

Fig. 2.—A type of deviation with a double compensatory vertical sweep.

nasal obstruction, while we receive constant reference of cases for study in this tract of involvement of the optic nerve.

Thus explained, the review of functional and pathologic lesions is pertinent to the topic, for their correction, as above stated, is essential to our propaganda of reconstruction.

Reverting now to the consideration of operative technic and the sequelae, positive and negative, certain localized phases of operative surgery in the rhinopharyngeal tract have become, within the past few years, most highly developed from an operative standpoint. The surgery of the nasal septum, the middle turbinate and ethmoidal sinuses, the pharyngeal orifice or the eustachian tube and the maxillary antrum have particularly shared in this progressive development—in fact, have become so specialized as to be associated with the name and procedure of certain eminent clinicians.

We may assume that those who skilfully and readily work beneath the perichondrium will elect this form of relief or its modification in preference to the varied procedures by saw, chisel, knife, electric burr and cautery.

Perhaps the most common type of deviation, presenting a frequent result of unrecognized traumatism, is shown in Figure 1, with a high bulging to the right and compensatory sweep below and overdevelopment of the ridge on the left. This simple form of deformity indicates but little explanation with the elaborate directions of Freer, Ballenger and others and the marvelous armamentarium provided therefor.

Figure 2 presents a type considerably more difficult, with a double compensatory vertical sweep, while in Figure 3, with both anterior and posterior nodular deformities, frequently invisible behind until the turbinates are well shrunken, is portrayed a type of disturbance most gratifying in its relief but frequently neglected or overlooked by the comparatively inexperienced nasal examiner.

As bewildering as the attempt at matching striped blades of oriental grass is the analysis and classification of irregular types of deviation. In the more intricate forms the assumption is justified that the skilful operator must be a mechanical expert, and I recall the ingenious suggestions of bevel saw and the button and ligature retention.

In my experience, perhaps the most successful nasal reconstruction resulted from three distinct operations: first, the removal of a vertical strip of cartilage, 3 or 4 mm. in width, from the anterior right nares to relieve the dislocated end of the triangular cartilage; then leaving a column which happened to remain in the median line, a formal submucous resection posteriorly on the left side for high compensatory bulge, and finally an external nasal operation which consisted in chiseling the nasal process of the superior maxillae on either side and swinging over an atrociously deformed external nose. The newly-constructed organ was of normal contour with evenly divided internal nares; there was restoration of the normal membrane, and a marked subsidence of eustachian symptoms which had well-nigh become organic.

In discussion of the operative technic, a successful replacement of the septum requires certain fundamental operative rules, and these are harmonious with the general principles of surgery: First, traumatism should be reduced to the minimum degree. This would mean an incision involving the simplest linear space. An increasing tendency in all general surgery would seem that of allowing sufficient room for careful

Fig. 3.—A type of deviation with both anterior and posterior nodular deformities.

observation, and the suggestions of Yankauer, Butt[11] and others for continuing this incision well over the angle of the floor is compatible with safety. Such an incision should be thoroughly carried to the cartilage. To the experienced operator, the feel of the knife will be a guide to the depth of the incision, as slight grooving in the cartilage can do no harm and emphasizes the depth.

10. Hilcher: Northwest Med., 1909.

11. Butt: Med. Times, Laryng., 1912.

The important circulatory channels, even though nasal anastomosis is most kindly, should be preserved and delicate nerve fibrils in the mucous membrane retained. The extent of operation, while only absolutely completed, as Freer[12] suggests, with all vestiges of bone deviation removed, should nevertheless not pass to the point of requiring unnecessary supportive splint pressure. A patient's recuperative condition must be considered, his limit of shock should be appreciated, the possible devitalizing of tissues from excessive topical shrinking, and anesthesia must be kept within bounds; while hemorrhage, apparently alarming, is really inconsequential. In comparison with other major operations, it cannot be of advantage to wound vessels and bony structure to the extent of causing copious bleeding.

Fig. 4.—Portion of septum containing the segment from the posterior smooth end of which the section (Fig. 5) was taken.

In order to fulfil these conditions, I am inclined here to follow my custom in tonsillar operation and reduce the instrumentarium to the minimum. While most elaborate and ingenious instruments have been devised for meeting the varied forms of all angular exudancy and distortion, few septal operations really require more than half a dozen well-selected instruments, and this selection is designed to be compatible with the after-results required.

Freer's half-round-bladed septum knife, double-ended separator and reinforced edge retractor, Ballenger's swivel knife, Brünig's forceps for the perpendicular plate of the ethmoid and vomer, Schwartz' chisel for anterior ridge and Watson's small nasal speculum would complete an outfit and serve in everything but an exceptional case.

I am accustomed to use a simple septal knife, then a double-sided spatula of Freer, using the dull end to lift the membrane, then sliding the sharp end of the spatula obliquely through the cartilage, which I have not once perforated since the adoption of this method. The operation is then carried backward with gradual lifting of both perichondrium and periosteum, completing the first step as near to the floor and anterior and posterior extremities as possible, and leaving a smooth, ungrooved field.

It seems unimportant, with such carefully exposed field, whether Ballenger's swivel knife, or Brünig's forceps, or other means be used for removing triangular cartilage, perpendicular plate of the ethmoid and upper part of the vomer. Many authors have urged the rocking or bending of the septum. The adjacent portions of the vomer or ridge swing thus into place, if there be not too much redundancy of tissue. The small chisel for the anterior portion, and Brünig's forceps for the posterior will adequately lift out difficult portions, and it is important in the alignment of the septum, though perhaps not absolutely necessary, that the complete anterior projecting end should be removed, and particularly the deflected hook or exostosis posteriorly. Operatively, this procedure leaves a clean and comparatively uninjured operative field.

12. Freer, Otto T.: The Nasal Septum; A Description of the Author's Present Manner of Performing the Window Resection for Deflections, THE JOURNAL A. M. A., Sept. 30, 1905, p. 985.

For the successful reconstruction of the septum, other points must be noted. The parts must be perfectly adjusted to secure primary coaptation and to prevent serous infiltration and hematoma. Angular incisions leave an extra granulating surface and a difficulty in the proximation of the folds. To prevent serous or hemorrhagic infiltration, a posterior point of drainage, as suggested by Butt and others, may advisably be made, well back between the folds of periosteum, as it can do no harm and stops a distressing complication with possible subsequent infection. The blood-vessels and delicate structures of the mucous membrane are then left in practically normal condition. The delay in secondary anastomoses is avoided if a minimum traumatism occurs.

Iglauer[13] suggests transplanting various substances to replace lost septal tissue, perforations, etc.—fat, skin, cartilage, bone, and other substances were investigated. This is not successful, hence, the importance of avoiding a gap and thus the necessity of replacing tissue, by leaving at least one perfect lateral surface of subsequent repair.

The operative sequelae of positive and negative type are nearly equal in number. The subjective relief of the patient, first, from his nasal stuffiness and associated irritation, and second the freedom from locked-up degenerated secretion are perhaps most consequential.

Alleviation of eye-strain and headache, relief of accompanying eustachian catarrh, and comfort to the nasopharynx from a remodeled air-current, are complements of the foregoing. The sinuses drain more freely and normally, their capacity as resonating chambers is improved, and slight colds do not irritate as before.

The work on the septum is capable of such careful analysis that accidents can in most cases be directly traced to faulty technic, which occurs here as in other forms of surgical interference.

Squamous epithelium replaces normal columnar epithelium in cvent of open cartilaginous granulation and gives rise to the constant irritating crusting, even without perforation. Perfect coaptation of the wound frequently leaves a scar which is almost invisible.

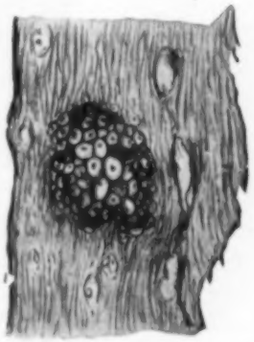

Fig. 5.—Slide showing fibrous tissue interspersed with vascular spaces, a certain amount of granular tissue and a well-formed nest of young, growing cartilage-cells.

The surface of the mucous membrane again becomes abnormally thickened and perhaps permanently hypertrophied from the undue traumatic pressure of excessive or unguarded splints. Whether the bismuth paste of Beck, the Cargile or other membrane-covered splints of others, or simple bismuth rubber strips of gauze (demonstrated to me by Fisher) are used, the result is perhaps nearly equal, if undue pressure be avoided. One cannot accept the belief that a degenerated slough, even though protective, can fail to produce deterioration to mucous membrane when present. I have not found it advisable to leave the cavity without splints, but I have obtained excellent results by covering them with thin rubber

13. Iglauer: Tr. Proc. A. L. R. and O., 1913.

tissue, which facilitates removal and seldom leaves excoriation.

Packard[14] has reviewed the accidents and complications following operative procedures, quoting Lermoyez' classification as those of infectious, nervous and mechanical origin and in the nervous group widespread disturbance from simple neuralgias, vertigo, etc., even to asthma, laryngeal spasm and exophthalmic goiter.

It seems to have been the experience of those who have done considerable submucous work that it is best to adopt this procedure in practically every septal case. It is logical to assume that the preservation of a normal membrane is infinitely preferable to replacement of other tissue, and that a normal membrane with the slightest opening presents the smallest avenue for entrance of infection.

The most important point in diagnosis is to determine what is functional and what organic septal abnormality and, having determined the organic deviation, to form correct judgment as to the sequence of physiologic events in surrounding nasal and postnasal chambers.

Careful determination should be made as to the integrity of the mucous membrane, and if one side of the septum be sclerotic and thinned from previous erosion, as to whether the opposite membrane has sufficient vitality to form a safe retaining wall after operation.

After the suggestion of Roe,[15] the character of the external nose must be considered under these conditions: the firmness, the tip of the anterior nares, the degree of droop in the lateral folds, the type of fullness or aquilinity in external appearance, and the relation of the deflecting bulge to the outlets of the accessory sinuses.

Secondary injury to sinus or eustachian tube is usually due to locking infective secretions behind the deviation. I would make an especial plea for one particular procedure—beyond simple salt solution, antiseptics should be avoided in the nose at or near the operative period. In the Children's Hospital, it has been the custom to leave tonsils without interference after the operation, and the results have been uniformly as favorable as with other methods. The nasal secretion is naturally protective, and I deprecate the destruction of such secretion by either excessive washing or application of any active chemical solution whatever.

No traumatism, no undue pressure, complete removal of offending deviating structure, and avoidance of destruction of the natural resistance of the nose thus would seem to be the cardinal features in reconstructing a normal nose.

Believing that findings of any positive value should be recorded in contemporary literature for the sake of mutual benefit, I selected the topic of this paper in part as a vehicle to present the following rather interesting opportunity for study.

Figures 4 and 5 show a reproduction, first, of the septum containing the segment from the posterior smooth end of which the section was taken, and second, a reproduction of a slide showing fibrous tissue interspersed with vascular spaces, a certain amount of granular tissue and a well-formed nest of young growing cartilage-cells.

This particular patient presented himself about a year ago suffering from hay-fever neurosis of marked degree; examination of the posterior nasal cavity revealed too close propinquity of the septum and the lower portion of the middle turbinate. Submucous resection was advised and arranged for the following September and rather fortunately assistance was rendered by a careful student of septal surgery, Dr. Butt.

In separating the perichondrium posteriorly, a peculiar leathery resistance was found—a feeling resembling that of pressing on chamois-skin. This tissue doubled up somewhat but was fully and successfully separated, and a large segment of the cartilaginous septum removed. Comment was made by those engaged in the operation on the unusual folded feeling, but no other great difficulty was experienced even over the cartilaginous borders, and the inner surface of the perichondrium did not seem abnormal. The patient gave a history of having undergone a nasal operation by a specialist in western New York about two years previously, but he was somewhat doubtful about its nature.

The specimen, as portrayed in Figure 4, showed a smaller fibrous arc of reformed septum within the larger segment, forcing the conclusion that a successful submucous operation, though an insufficient one, had been done previously. The posterior hook-like end of the vomer also continued to cause disturbance. This specimen placed in weak formaldehyd solution and later in alcohol hardened into firm septum, and, on cross-section, as in Figure 5, revealed a well-formed nest of cartilage-cells, some evidence of reforming blood-vessels and a very firm union of the fibrous tissue and the adjacent portions of the cartilage.

Several points of interest arose from this demonstration: First, it was possible a second time to lift the perichondrium, probably a silent testimonial to the skill of the previous worker, and it was possible even to remove this adequately from the junction lines of the repaired and permanent septum. Second, the circulation in and around the septum seems to have been quite adequately restored, and the mucous membrane did not indicate the fact of a previous submucous operation. Third, the body of the repaired tissue was a dense fibrous stroma with occasional interspaces, perhaps circulatory, and containing this nest of growing cartilage-cells. Fourth, the consistency and strength of the septum seemed thoroughly adequate under all manipulative measures prior to the operation.

The question arises as to the reformation of cartilage growth. After careful examination and discussion with various physicians, I have come to believe that the cartilage is probably due to accidental growth and possibly a portion of cartilage left, though showing no bulging. The picture, however, presented both intranasally and subperichondrially and even after removal was that of a perfectly restored septum, somewhat thinner and more pliable than the original. My conclusion is in conformity with evidence repeatedly indicated, that cartilage itself does not reform. The weight of evidence in favor of the reassumption of anatomic and physiologic integrity is, however, most satisfactory.

CONCLUSIONS

1. A submucous resection, properly and completely done, will reconstruct a perfect, functional septum.

2. If a careful superior margin be left, even with scant anterior and posterior sthenic removal, the align-

14. Packard: Diseases of the Nose and Throat.
15. Roe: Med. Rec., New York, 1905.

ment in the nose externally and internally will be satisfactory and adequate.

3. If the bulging extremities of the nasal tubercles, ridge, and vomer, when obstructing the nares, are not relieved, the result of the operation is unsatisfactory to the patient.

4. The removal of posterior pressure is more important than a harmonious anterior picture, and unequal space in front does not necessarily disturb respiratory and drainage functions.

5. Fresh anastomoses will restore obliterated vessels to the extent of presenting a normal vascular septum if traumatism has not been unreasonable.

6. Areas in which mucous tissues are lost and replaced by squamous epithelium will probably crust, allow occasional intermittent hemorrhage and irritate the nose.

7. Perforations may be avoided if at least one firm side of mucous membrane is allowed to remain intact.

8. In soft, collapsible roof and sides a greater margin of cartilaginous and bony ring should be left to support the flexible nose and prevent drooping.

9. Drainage and perforation posteriorly will not injure the nose and will prevent exudate and hematoma of the septum.

10. Pressure of pads and splints should be avoided by protection of their surfaces and adequate judgment as to amount easily tolerated.

11. Reflex and other symptoms associated with the indication for operation will gradually disappear completely in a large percentage of cases.

12. Submucous removal is the method of preference for all septal procedures, and when carefully and completely performed may afford immeasurable relief.

13. The natural secretion of the nose will prove sufficient for postoperative antisepsis.

14. The new fibrous replaced septum bears approximately the same relation to the perichondrium and periosteum as before.

15. There is no evidence that the softer reorganized septum carries any functional disadvantage, even in its vasomotor relations.

1901 Chestnut Street.

Truth-Telling by Physicians.—Everyone makes mistakes, and on this account if on no other, in the practice of such an inexact science as medicine, a proper humility as to our ability to forecast the future is becoming in members of the profession. The effect of truth—given that it is the truth—on suffering humanity is to be reckoned with in a discussion of the advisability of communicating medical facts to patients. The wise physician realizes that human nature is most diverse in its aspects; he takes into account the greatest number of the traits of character of his patients; he is more often taciturn than talkative; he thinks twice before speaking the truth.—*Boston Med. and Surg. Jour.*

VALUE OF ROENTGENOGRAPHY IN DIAGNOSIS OF DISEASES OF LARYNX AND TRACHEA*

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The Roentgen rays have proved to be a great aid to the rhinologist and otologist in the diagnosis of diseases of the accessory cavities of the nose, and in the study of the pathology of the mastoid region. In the field of laryngology, on the other hand, the Roentgen rays have been employed chiefly for the study of the development (ossification) and physiology of the larynx. The very complete atlas issued by Thost[1] of Hamburg in 1913 represents the first systematic attempts to study the pathology of the larynx by means of the Roentgen rays.

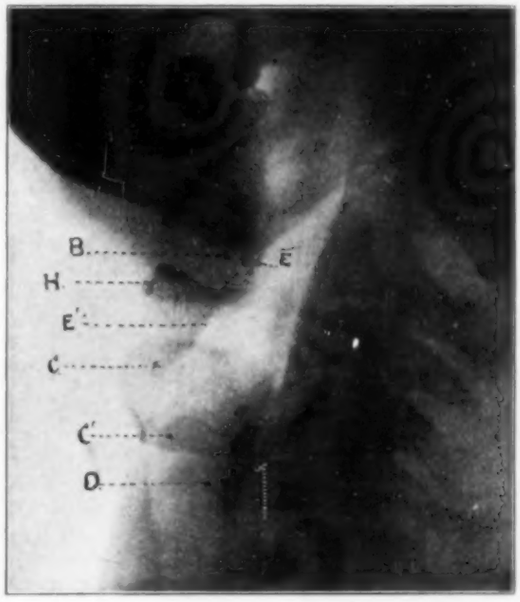

Fig. 1.—Normal larynx of a man, aged 45; *H*, body of hyoid bone. *B*, base of tongue; *E*, *E'*, epiglottis. *C*, *C'*, markedly ossified thyroid cartilage; note the ascending and descending horns of same. *D*, cricoid cartilage. The lumen of the trachea, larynx and pharynx are well delineated.

PHYSIOLOGY

In the domain of physiology the Roentgen rays have demonstrated some interesting facts concerning certain functions of the larynx. Thus the long-debated question as to whether the cricothyroid muscles act as depressors of the thyroid cartilages or as elevators of the cricoid has been definitely settled in favor of the latter by the studies of Moeller and Fischer.[2] The various positions assumed by the lips, tongue, soft palate and larynx during phonation have been accurately determined by the beautiful roentgenograms of Scheier.[3] More remarkable than these are his[4] Roentgen studies of deglutition, in which he was able to portray the position of the bismuth mass in the fractional part of a second required for it to pass the larynx. According to Thost,[1] roentgenography will demonstrate the well-developed muscular apparatus in the larynges of professional singers.

OSSIFICATION OF THE LARYNX

The Roentgen rays are particularly valuable for the study of the normal process of ossification of the laryngeal cartilages, and in order to appreciate some of the pathologic conditions of the larynx it is important that we should be familiar with the usual course

* Read before the Section on Laryngology, Otology and Rhinology at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

1. Thost, A.: Archiv und Atlas der normalen und kranke Kehlkopf des Lebenden im Roentgenbild, Fortschr. a. d. Geb. d. Röntgenstrahlen, 1913.

2. Moeller and Fischer: Arch. f. Laryngol. u. Rhinol., 1903, xv.

3. Scheier, M.: Arch. f. Laryngol. u. Rhinol., 1909, xxii, No. 2.

4. Scheier, M.: Zur Physiologie des Schluckakts, Schäfer-Passow Beitr., 1911, iv, Nos. 1 and 2.

of ossification. According to Scheier[5] and Fraenkel,[6] ossification usually begins during the eighteenth or nineteenth year of life, and in both sexes is first noted in the lower part of the posterior border of the thyroid cartilages. From this region it gradually ascends along the posterior border. Ossification then gradually

Fig. 2.—Marked ossification of thyroid cartilage in a man aged 50. Note sharp outline of the epiglottis. Upper arrow rests on the body of the hyoid bone.

extends forward along the inferior border of the thyroid, giving rise to an L-shaped mass of bone.

In the male, a new center arises at the inferior thyroid notch and another along the superior thyroid border, and by the gradual coalescence of all these centers the cartilage eventually may be completely surrounded by a bony frame (after the fortieth year). See Figs. 1 and 2.

In the female the same process may occasionally occur, but more characteristic for this sex is the freedom from ossification in the anterior portions of the thyroid wings.

An oblique bony line dividing the thyroid into two islands is common in the male, but practically always absent in the female.

In the cricoid the process begins in the seal portion and gradually extends forward into the ring portion of the cartilage.

The arytenoids are next in order and the tracheal rings are among the last to show signs of ossification. Roentgenoscopy has proved that ossification may also occur in the epiglottis.

TECHNIC

Roentgenography of the larynx in the living is easily carried out. The patient sits on a chair or lies on a couch with the plate (8 by 10) in contact with the side of the neck and parallel to the median plane of the body. The patient is instructed to hold his breath and not to swallow during the exposure, which requires about six seconds. A profile picture of the larynx is thus obtained with one side of the larynx superimposed on the other, but the side in contact with the plate comes out very distinctly.

All the roentgenograms which form the basis of this paper were taken for me by Dr. Sidney Lange, to whom I am greatly indebted, and who in another paper will more fully describe the technic.

THE NORMAL LARYNX IN THE ROENTGENOGRAM

The roentgenogram reveals the following structures (Fig. 1):

The horse-shoe shaped hyoid (*H*) bone and its two processes stand out sharply, as does the base of the tongue (*B*). The epiglottis (*E*) can be seen projecting between the wings of the hyoid bone. The thyroid cartilage (*C*, *C'*) more or less ossified, is very prominent, while the cricoid (*D*) is covered to some extent by the descending horns of the thyroid. The ventricle of Morgagni is frequently outlined as an oval clearer space in the anterior portion of the thyroid. The arytenoids and aryepiglottic folds and the cricothyroid space can be distinguished. The lumen of the larynx appears distinctly as a lighter area continuous below with the well-defined lumen of the trachea in which the rings, when ossified, stand out distinctly. Before ossification occurs the cartilages are not well delineated, but the air-passages themselves stand out sharply and distinctly in the roentgenogram. (See Fig. 5).

TUBERCULOSIS OF THE LARYNX

Quite characteristic for the roentgenogram of this disease is a peculiar hazy indistinct outline of the laryngeal cartilages, giving the impression of an overexposed picture. This type of picture recurs so frequently with the tuberculous larynx that it has great

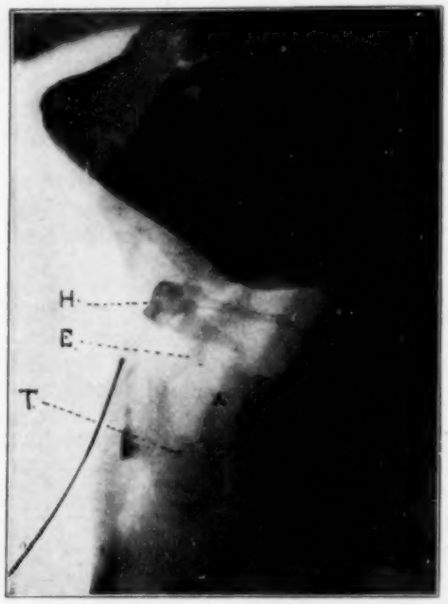

Fig. 3.—Tuberculosis of larynx in a man aged 33, with advanced pulmonary tuberculosis. Subcutaneous tuberculous (?) fistula, containing probe in front of thyroid cartilage. Infiltration of aryepiglottis folds demonstrated at *X*. Hazy appearance of *T*, thyroid cartilage, that is, resorption of lime-salts characteristic for laryngeal tuberculosis. Note dense center of ossification in anterior unaffected portion. *H*, hyoid bone, and *E*, epiglottis well delineated. Note lumen of larynx and trachea.

value from a diagnostic point of view. It indicates very clearly that the tuberculous process is not confined to the lining mucosa of the larynx, but that

5. Scheier, M.: Ueber die Ossifikation des Kehlkopfes, Arch. f. mikr. Anat. u. Entwicklungsgeschichte, 1901, lix; Schäfer-Passow Beitr., 1910, iii, No. 4.

6. Fraenkel, E.: Fortschr. a. d. Geb. d. Roentgenstrahlen, 1908, xii, 152.

changes occur in the underlying cartilage associated with the resorption of bone. This is distinctly analogous to rarefying changes so frequently noted in roentgenograms of the long bones when the joints are the seat of tuberculous disease. In addition to the changes in the cartilage the infiltration of the soft parts, such

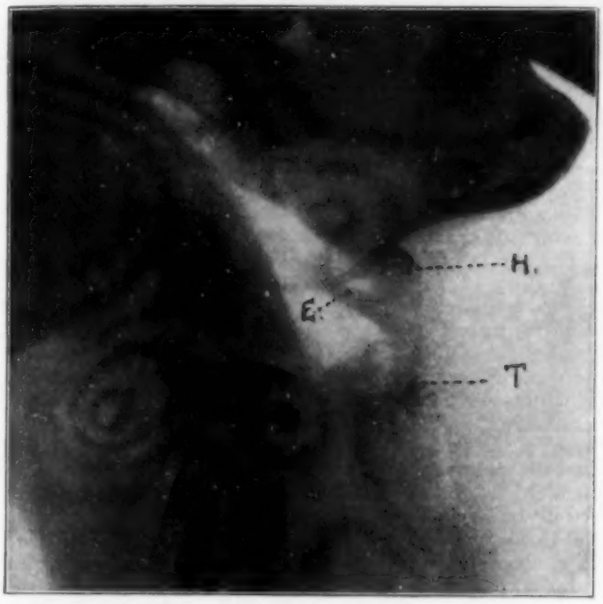

Fig. 4.—Case of carcinoma of hypopharynx in a woman aged 40. The peculiar punched-out appearance of the thyroid cartilage, *T*, is regarded by Thost as characteristic (?) for carcinomatous invasion of the thyroid cartilage from the pharynx (see text). *H*, the hyoid bone, *E*, epiglottis and the laryngotracheal lumen clearly delineated.

as the aryfolds, stand out distinctly. Defects or infiltration of the epiglottis give characteristic pictures.

Roentgenography offers another demonstration of the fact that tuberculous lesions are almost always more extensive than the image in the laryngeal mirror would indicate. (Fig. 3).

SYPHILIS

In contrast to tuberculosis, tertiary syphilis of the larynx is usually associated with a tendency to proliferation rather than to resorption of bone. The roentgenograms in syphilis, therefore, give sharp distinct pictures of the ossified portions of the larynx (Thost). Infiltration or defects in the soft parts may also be made out. In the roentgenogram of a healed case coming under my observation a peculiar cavity, probably due to a former necrosis, is seen above the thyroid cartilage. In another healed case of laryngeal and pharyngeal syphilis associated with the formation of dense cicatrices in the pharynx, the distortion of the lumen of the larynx by cicatricial traction is very well demonstrated.

In doubtful cases, roentgenography should be of considerable value in demonstrating syphilitic perichondritis and in differentiating syphilis from tuberculosis.

CARCINOMA

Carcinoma of the larynx usually occurs in the ossified larynx of the aged, and this tends to obscure intralaryngeal tumors. Nevertheless, a massive tumor can often be made out, and if the lumen be encroached on, the narrowed air-passage can be seen. Tumors of the epiglottis or aryfolds are more readily delineated. In carcinoma of the hypopharynx, with secondary involvement of the larynx, Thost describes roentgenograms with a sieve-like appearance of the thyroid cartilage which he attributes to carcinomatous invasion of the ossified cartilage. Since the same picture may occur in normal larynges, however, and since I have not found it in any of the four intralaryngeal cancers which have been roentgenographed, and but once in three cases of carcinoma of the pharynx, it seems to me that he has overestimated the importance of these findings. (Fig. 4).

STENOSES OF THE LARYNX

In obstruction of the larynx or trachea by foreign bodies, or by tumors or cicatrices within the air-tract, or by compression from without, very interesting roentgenograms can often be obtained. The tumor is often visible and the narrowed lumen appears distinctly.

In one of my cases of papilloma, which required tracheotomy, the roentgenogram shows the entire lumen obliterated above the tracheotomy tube. In a second case of stenosis due to cicatrization following intubation and tracheotomy for diphtheria, the roentgenogram, taken for control, showed a complete restoration of the lumen after treatment.

Roentgenography demonstrates very beautifully the deposits of lime-salts which so frequently occur when the laryngeal or tracheal cartilages have been incised. Thus in a patient who has worn a tracheal cannula for seven years the fistula from the skin to the trachea is completely encased in calcified tissue (Fig. 6).

Considering the difficulties often encountered in examining cases of stenosis by the direct method, a preliminary roentgenogram should often prove to be a great aid to the laryngologist. This is especially true

Fig. 5.—*G*, moderate-sized goiter, showing its relation to the trachea, *T*, in a girl aged 19. At *X*, *X*, slight ossification in posterior portion of thyroid cartilage. Air-passages delineated by clear zone.

of foreign-body cases, or in cases of aneurysm, goiter or enlarged thymus. (Fig. 5).

RARE DISEASES AND FRACTURES OF THE LARYNX

In addition to the diseases described above, Thost has made interesting Roentgen studies of the gouty larynx and of pemphigus of the larynx. In certain

so-called nervous lesions of the throat, he has demonstrated on the bodies of some of the cervical vertebrae new-formed spines and ridges to which he attributes the "nervous" symptoms.

In a limited number of cases, I have fractured the larynges in cadavers and have then had roentgenograms taken. In each instance fracture-lines can be

Fig. 6.—Calcified tissue at *X*, *X*, encasing a tracheotomy fistula in a patient who has worn a tracheotomy tube for seven years. *C*, the cricoid cartilage. *S*, cricothyroid space. *T*, the ossified thyroid with its inferior and superior horns. *H*, the hyoid bone, and the epiglottis, are well delineated.

demonstrated (Fig. 7). I hope to be able to report more fully on this particular subject at some future time.

CONCLUSIONS

Satisfactory diagnoses of diseases of the larynx and trachea can usually be made by the ordinary method of examination, but our observations for the most part are limited to a study of the changes in the lining mucous membrane and give no certain information concerning the changes in its underlying and adjacent structures.

The Roentgen examination gives additional information concerning the pathologic changes in the underlying cartilages, which are more or less involved whenever the laryngeal mucous membrane is the seat of a chronic disease process, such as tuberculosis or syphilis.

In stenosis or distortion of the lumen of the larynx or the trachea, roentgenography usually reveals the seat, the nature and the extent of the lesion. The knowledge thus gained before operative procedures are undertaken on the larynx is of great value. Roentgenography also enables us to study the effects of operation and the position of tubes, etc.

Owing to the ease with which it is carried out, the Roentgen method is of a special value in the examination of children or nervous patients.

In concluding I wish to express my appreciation of the kindness of Drs. A. B. Thrasher, S. E. Allen and William Mithoefer in placing some of their patients at my disposal for Roentgen study.

22 West Seventh Street.

ABSTRACT OF DISCUSSION

Dr. G. E. Pfahler, Philadelphia: The more or less new work done by Dr. Iglauer in the diagnosis of disease in the larynx opens up a new field in which I am sure we will make progress. We have all seen these things, but most of us have failed to interpret them properly, but with this aid we will certainly make rapid advances in this respect. I have not made much attempt to diagnose diseases of the larynx. In my studies of the larynx and neck I have seen some of these changes but did not interpret them properly. Dr. Skillern and I presented a paper on sphenoidal disease three years ago and the more I use the method and the more I study these sinuses, the more I am convinced of the value of this work. The two sphenoid outlines can be compared directly and if looked at as a whole one stands out more clearly than the other and the definite outline of the sphenoid can be noted in nearly every one of the plates. We should be just as careful in interpreting the sphenoid sinuses as the others.

Dr. P. M. Hickey, Detroit: The work that has been shown this morning in the differentiation of soft tissue details would be accentuated by the recent improvements which are coming out in the ability of the roentgenologist to control the performance of his tubes. We have been missing the soft tissue details because we have not been able to control accurately the performance of the tube. We have used the three gradations, hard, medium and soft, with no exact means of differentiation. The late improvements which some of the roentgenologists have placed at our disposal, in getting exact regulation of the tubes for soft tissue details, will enable us to make greater progress along this line. One thing about the trachea is the importance of the outline in the anteroposterior position, with the plate against the chest, of substernal thyroid, where perhaps there is no visible tumor on the outside, and yet where compression of the trachea can be beautifully demonstrated on the plate.

Fig. 7.—Fractured larynx in cadaver of a man aged 69.

Dr. E. W. Caldwell, New York: Will Dr. Iglauer explain again the difference between the calcification of the larynx alleged to be characteristic of syphilis, and that which is alleged to be characteristic of carcinoma? Also does he think that calcification or ossification in the larynx is essentially different from the same process in other cartilages, such as the costal cartilages? Has he observed that the degree of calcification of the larynx bears any relation to the amount of calcification of other cartilages in the same individual?

DR. MARK D. STEVENSON, Akron, Ohio: I recently had a case of marked stenosis of the larynx which necessitated immediate tracheotomy. The roentgenograms showed conclusively that it was a case of acromegaly. The pictures demonstrated ossification of the larynx and the condition of the pituitary body.

DR. G. C. JOHNSTON, Pittsburgh: I had the pleasure of examining the patient just referred to by Dr. Stevenson, a case of acromegaly, and the examination of the larynx was interesting. I had not previously associated these cases of acromegaly with involvement of the larynx at all. The patient had the typical gingerbread-man hands and characteristic features. Not long ago in investigating some pituitaries, we found one that was ideal for the Cushing operation, having all the indications. The surgeon went in to perform submucous resection and just when he was completing that and was about to enter the sphenoid there was a gush of pus which was a contra-indication for going further. The lesson is not to look too much in one place. We failed to see the evidence of necrosis in the hard palate. We must be looking for trouble all the time or we will find it without looking for it.

DR. A. I. WEIL, New Orleans: I have had little experience with roentgenograms of the larynx except one case in which its use was shown, that of a man who had had ossification of the arytenoids which had sloughed out, so that he coughed up one complete arytenoid, and later the other. He brought the specimens to me and when we looked into the larynx there was sinking of the arytenoid region, but we could not have told to what it was owing if we had not seen these specimens. With the roentgenogram, although the picture was hazy, it was easy to see the absence of the arytenoids. Without that it would have been impossible to state the condition that had preceded his presenting himself for treatment. I have used the Roentgen ray in bone lesions in retropharyngeal abscess on several occasions, and find it a very valuable aid to examination with the probe. It outlines very clearly the cavity and aids in the treatment.

DR. HARRIS P. MOSHER, Boston: This paper teaches that we should take more radiograms of the larynx and endeavor to learn to interpret them properly. I had a rather embarrassing and somewhat humorous case of a retired manufacturer who had taken up farming. He was building a chicken coop and had a lot of staples in his mouth, and thought that he had swallowed one. Sometime later he had some disturbance and went to a general physician who took a roentgenogram and told him the staple was there, and brought the patient down for me to see. On looking at the roentgenogram I was a bit suspicious; I examined the man by the direct method, and was still more suspicious. I sent him for another picture and found that what had shown in the first picture was nothing more nor less than the hyoid bone.

DR. GEORGE F. COTT, Buffalo: All laryngologists acknowledge the value of roentgenograms but the average cases that the practitioner sees are not the ones shown. When there is considerable thickening in the larynx it shows, b t when there is a rarefying condition the Roentgen ray shows nothing, and they are the cases that the average practitioner sees.

DR. L. E. LEWALD, New York: I had two cases of retropharyngeal abscess that we were able to differentiate successfully in children. A physician who saw one of the cases was of the opinion that it was tuberculosis of the cervical vertebrae, with probably abscess of that origin, which would preclude opening the abscess in the pharynx. Roentgenoscopy disclosed not only absence of any bone lesion in the vertebrae but also, very distinctly, the outlines of an abscess in the pharynx, and it was opened successfully. Another patient in whom there was swelling in the pharynx, associated with tuberculosis of the cervical lymph-nodes, showed an outline in the pharynx sufficiently well to warrant incision. One other case of interest was that of a supposed tumor, as carcinoma of the upper end of the esophagus, in which the Roentgen ray enabled us to exclude a tumor and make a diagnosis, when taken together with other symptoms, of glossolabiolaryngeal paralysis.

DR. SAMUEL IGLAUER, Cincinnati: Dr. Hickey referred to pictures of the trachea. I did not go into that subject much because it has been worked out pretty well by the roentgenologist. I have a picture, however, which shows a kink in the trachea due to pleuritic adhesions pulling it out of line. In compression of the trachea by a thyroid tumor, it is, of course, necessary to have anteroposterior pictures. Dr. Caldwell asks about calcification and ossification in the larynx. It is difficult to reduce the matter to rules, but I think according to the work of Fraenkel and Scheier, that it begins at about the age of 19. Sometimes you find it at 14 or 15 years, but you may find a woman as old as 100 without any distinct ossification in the anterior portions of the thyroid cartilage. Calcification usually precedes ossification. I mentioned the relation of the vertebrae to laryngeal conditions. With an abscess in the retropharynx, it is very important to study the condition of the vertebrae. I have had no experience with acromegaly and am interested in the report made by Dr. Stevenson and Dr. Johnston. With regard to Dr. Weil's case, some studies have been made on the question of dislocation of the arytenoid cartilages, and it has been possible to diagnose the condition by the Roentgen ray. As to Dr. Mosher's case, it is easy to understand how that mistake could be made, as the hyoid bone would have the appearance and shape of a staple. Just the reverse of his experience occurred to me. A patient was brought to me with the statement that roentgenogram had shown no foreign body, but I had another taken which revealed a safety pin which had been in the larynx for six months.

THE FEEDING VALUE OF SANATOGEN COMPARED WITH COMMERCIAL CASEIN WITH RESPECT TO MAINTENANCE AND GROWTH

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The proprietary preparation "Sanatogen" is claimed to consist of about 95 per cent. casein and 5 per cent. sodium glycerophosphate. The analysis of C. B. Morison[1] is as follows:

Water	9.97
Total nitrogen	12.81
Nitrogen, ppt. by acetic acid	12.54
Casein	80.01
Ether extract	0.11
Ash	5.59
Sulphur, total	0.73
Sulphur in casein	0.64
Phosphorus, total	1.49
Phosphorus in casein	0.69
Phosphorus in inorganic form	0.11

In connection with the above analysis it was demonstrated that sodium glycerophosphate was present. Sanatogen, therefore, consists essentially, on the water-free basis, of about 90 per cent. casein and 5 per cent. sodium glycerophosphate, with a small amount of an unidentified nitrogenous compound containing both sulphur and phosphorus, and a small amount of phosphorus in inorganic combination. The manufacturers claim that the two essential ingredients exist in Sanatogen as a definite chemical compound. Certain authorities, on the other hand, have insisted that the casein and glycerophosphate have not been chemically combined and that Sanatogen is simply a mechanical mixture of the two. Which claim is correct we will not consider here, for indeed

1. Morison, C. B.: Rept. Conn. Agric. Exper. Station, 1912, p. 197.

it is of little importance, for whether or not chemically combined the action of the digestive fluids of the body would speedily break down the alleged compound into its constituents, and the body would have casein and the glycerophosphate offered for its use, just the same as though they had been offered as a mere mechanical mixture.

It being apparent that Sanatogen consists almost entirely of casein and sodium glycerophosphate, the former well-known ingredient making up nine-tenths of its weight, the question naturally arises how a mixture of these two common substances can acquire, simply by that admixture, unusually valuable properties not possessed by the two components. Leading physiologists quite generally agree that phosphorus in the form of glycerophosphates influences metabolism very little. Furthermore, it is obvious that the food value of the small amount of glycerin present must be slight. It is apparent, therefore, that whatever nutriment or energy Sanatogen supplies must be dependent on its main constituent, casein.

Sanatogen is commonly sold at retail in 100 gm. or 200 gm. packages for $1 and $1.90, respectively. It is possible that in larger quantities these prices might be shaded somewhat, but the fact remains that the ordinary retail purchaser of Sanatogen pays for it about 1 cent per gram, or about $4.50 per pound. If the value of Sanatogen depends on its casein, one might ask, in all fairness, why should the patient pay $4.50 per pound for Sanatogen when he can secure ordinary commercial casein for 8.5 to 10 cents per pound? (The Casein Mfg. Co. of New York quoted to me their No. 60 casein at 10 cents per pound in 5-pound lots, 8.5 cents per pound f. o. b. Bainbridge, N. Y., in 100-pound lots, and 8.5 cents per pound, freight paid, in 500-pound lots.) I have purchased Sanatogen from a wholesale druggist at the rate of $2.75 for 400 gm., or $3.12 per pound, so that under the most favorable conditions the cost of Sanatogen is more than thirty times as great as the commercial casein in question.

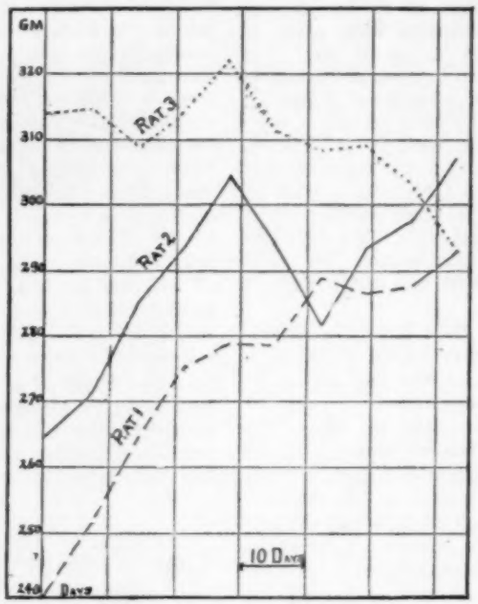

Chart 1.—Growth curves of Rats 1, 2 and 3, on Ration 1: Casein.

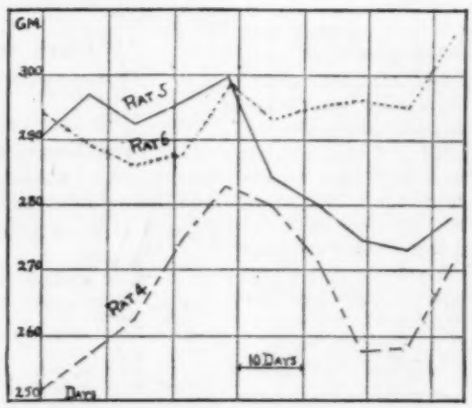

Chart 2.—Growth curves of Rats 4, 5 and 6, on Ration 2: Sanatogen.

Is the consumer justified in paying this exceedingly high price for purified casein? The following feeding experiments were carried out to answer this query.

FEEDING EXPERIMENTS

White rats were chosen for the experimental animals because of their adaptability for tests of this kind, as shown by the extended successful experience of Osborne and Mendel, and also because, by using white rats, I could take advantage of the equipment and the experience of my colleagues, Dr. T. B. Osborne, Prof. L. B. Mendel and Miss Edna L. Ferry.

The value of Sanatogen as compared with commercial casein was studied from two points of view:

1. Its value in maintaining the weight of mature rats.
2. Its value in promoting the growth of young rats.

I. THE MAINTENANCE OF WEIGHT OF MATURE RATS

The Sanatogen used contained 12.88 per cent. of nitrogen, and the casein, 12.82 per cent., so that from the point of view of nitrogen content they were practically equivalent, gram for gram.

Six healthy male animals were

TABLE 1.—WEIGHTS OF CASEIN RATS, ON RATION NO. 1, OVER A PERIOD OF NINE WEEKS*

Date	Rat 1			Rat 2			Rat 3		
	Weight, gm.	Gain or Loss, gm.	Food Eaten, gm.	Weight, gm.	Gain or Loss, gm.	Food Eaten, gm.	Weight, gm.	Gain or Loss, gm.	Food Eaten, gm.
1/2	240.0	.....	.....	264.6	.....	.....	314.1	.....	.....
1/9	250.8	+10.8	73.7	270.9	+ 6.3	85.2	314.6	+ 0.5	95.7
1/16	264.3	+13.5	89.3	284.9	+14.0	99.2	308.7	— 5.9	117.9
1/23	274.9	+10.6	90.7	293.5	+ 8.6	107.7	313.8	+ 5.1	116.5
1/30	278.6	+ 3.7	80.2	304.5	+11.0	100.5	322.2	+ 8.4	116.7
2/6	278.3	— 0.3	82.4	294.2	—10.3	97.0	311.2	—11.0	119.9
2/13	288.7	+10.4	85.5	281.5	—12.7	94.2	308.2	— 3.0	125.6
2/20	286.4	— 2.3	86.1	293.3	+11.8	86.8	309.0	+ 0.8	126.8
2/27	287.6	+ 1.2	81.1	297.6	+ 4.3	100.7	303.4	— 5.6	129.3
3/6	292.6	+ 5.0	80.1	307.4	+ 9.8	103.1	292.4	—11.0	101.0
Total	.....	+52.6	759.1	.....	+42.8	874.4	.....	—21.7	1,049.4
Average per week	.....	+ 5.8	84.3	.....	+ 4.8	97.2	.....	— 2.4	116.6

* The growth curves of Rats 1, 2 and 3 are given in Chart 1.

selected, Rats 1, 2 and 3 being fed the casein ration and Rats 4, 5 and 6 the Sanatogen ration. At the beginning of the experiment the casein rats were 257, 360 and 376 days old; the Sanatogen rats, 249, 321 and 275 days old, respectively. These weight conditions, if anything, slightly favored the Sanatogen rats, as they were slightly less mature, and a greater growth might naturally be expected.

The rations fed had the following percentage composition:

Ration 1		Ration 2	
Casein	20	Sanatogen	20
Protein-free milk*	28	Protein-free milk*	28
Lard	8	Lard	14
Unsalted butter	18	Unsalted butter	18
Corn starch	26	Corn starch	20

* Osborne and Mendel: Feeding Experiments with Isolated Food Substances, Carnegie Inst. of Washington, Publ. 156, 1911, Part 2, p. 80.

The rats were weighed twice a week for nine weeks, a record of the food consumed also being kept. Table 1 shows the weekly weights of the casein rats, the weekly gain or loss, and the weekly consumption of food. Table 2 gives similar data for the Sanatogen rats.

ogen were compared, using both Osborne and Mendel's "protein-free milk" and their "artificial protein-free milk IV."[2] Butter fat was also substituted for the unsalted butter used in Rations 1 and 2.

The percentage composition of the rations fed was as follows:

Ration 3		Ration 5	
Casein	20	Casein	20
Protein-free milk	28	Artificial p.-f. milk IV	29
Lard	8	Lard	8
Butter-fat	18	Butter-fat	18
Corn starch	26	Corn starch	25
Ration 4		**Ration 6**	
Sanatogen	20	Sanatogen	20
Protein-free milk	28	Artificial p.-f. milk IV	29
Lard	14	Lard	14
Butter-fat	18	Butter-fat	18
Corn starch	20	Corn starch	19

Two male rats were used with each of Rations 3 and 4, and three with each of Rations 5 and 6. They were all healthy young rats ranging from 57 to 71 days old. As in the first series of experiments the rats were weighed twice a week and a record kept of the food consumed. Rations 3 and 4 were fed for 77 days, Rations 5 and 6 for 35 days.

TABLE 2.—WEIGHTS OF SANATOGEN RATS, RATION NO. 2, OVER A PERIOD OF NINE WEEKS*

Date	Rat 4			Rat 5			Rat 6		
	Weight, gm.	Gain or Loss, gm.	Food Eaten, gm.	Weight, gm.	Gain or Loss, gm.	Food Eaten, gm.	Weight, gm.	Gain or Loss, gm.	Food Eaten, gm.
1/2	251.8	.....	.....	290.6	.....	....	294.0	.....	.....
1/9	257.1	+ 5.3	73.4	297.2	+ 6.6	86.3	289.1	— 4.9	58.4
1/16	262.4	+ 5.3	89.8	292.4	— 4.8	88.9	286.1	— 3.0	76.8
1/23	274.4	+12.0	97.3	295.7	+ 3.3	92.8	287.6	+ 1.5	85.8
1/30	282.7	+ 8.3	95.5	299.5	+ 3.8	92.3	298.6	+11.0	90.9
2/6	279.8	— 2.9	97.7	284.2	—15.3	87.7	292.9	— 5.7	89.8
2/13	271.2	— 8.6	96.1	280.0	— 4.2	94.9	295.1	+ 2.2	99.7
2/20	257.5	—13.7	91.6	274.9	— 5.1	96.4	296.0	+ 0.9	93.9
2/27	258.0	+ 0.5	93.5	273.0	— 1.9	103.3	295.0	— 1.0	95.1
3/6	270.9	+12.9	94.8	278.1	+ 5.1	94.9	306.3	+11.3	89.4
Total	.....	+19.1	829.7	.....	—12.5	837.5	.....	+12.3	779.8
Average per week	.....	+2.7	92.2	.....	— 1.4	93.1	.....	+ 1.4	86.6

* The growth curves of Rats 4, 5 and 6 are given in Chart 2.

Certainly the above data show no superiority of Sanatogen over commercial casein. In fact the results might be taken to suggest a slight advantage for the cheaper article, if one were warranted in drawing fine distinctions from a limited number of animals.

To conclude, *a comparative feeding of six male white rats during nine weeks showed no nutritive superiority of Sanatogen, costing $3.12 per pound, over commercial casein costing 10 cents per pound.*

II. THE PROMOTION OF GROWTH IN YOUNG RATS

In the second series of experiments ten male rats were used with four different rations. In these, casein and Sanat-

Table 3 shows the weekly weights and gains or losses of the rats fed Rations 3 and 4.

Rat 8 suffered more or less from diarrhea during a considerable part of the experiment, covering a period from March 16 to April 9, and from April 13 to May 11. The food intake correspondingly decreased during those periods.

The difference in the gains in weight shown by the four rats are not great and certainly do not warrant the conclusion that Sanatogen possesses any marked superiority over the commercial casein in promoting growth. The slightly increased gains shown by Rats

2. Osborne and Mendel: Jour. Biol. Chem., 1913, xv, 317.

TABLE 3.—COMPARATIVE WEIGHTS OF RATS FED RATIONS 3 AND 4

Date	Weights of Rats, Ration 3, Casein, Protein-Free Milk				Weights of Rats, Ration 4, Sanatogen, Protein-Free Milk			
	Rat 7		Rat 8		Rat 9		Rat 10	
	Weight, gm.	Gain or Loss, gm.	Weight, gm.	Gain or Loss, gm.	Weight, gm.	Gain or Loss, gm.	Weight, gm.	Gain or Loss, gm.
3/9	142.2	.....	108.0	.....	127.8	.....	107.0	.....
3/16	152.8	+10.6	120.3	+12.3	129.1	+ 1.3	116.0	+ 9.0
3/23	165.7	+12.9	135.1	+14.8	144.6	+ 15.5	134.5	+ 18.5
3/30	178.6	+12.9	140.4	+ 5.3	160.0	+ 15.4	149.8	+ 15.3
4/6	187.8	+ 9.2	148.8	+ 8.4	173.1	+ 13.1	143.8	— 6.0
4/13	198.5	+10.7	157.6	+ 8.8	185.6	+ 12.5	166.1	+ 22.3
4/20	204.6	+ 6.1	164.6	+ 7.0	194.8	+ 9.2	179.4	+ 13.3
4/27	210.3	+ 5.7	167.2	+ 2.6	204.6	+ 9.8	191.0	+ 11.6
5/4	223.0	+12.7	179.6	+12.4	222.9	+ 18.3	204.7	+ 13.7
5/11	223.6	+ 0.6	191.6	+12.0	236.4	+ 13.5	210.8	+ 6.1
5/18	231.5	+ 7.9	203.6	+12.0	240.0	+ 3.6	218.6	+ 7.8
5/25	237.4	+ 5.9	213.9	+10.3	247.3	+ 7.3	226.7	+ 8.1
Total	.....	+95.2	.....	+105.9	.....	+119.5	.....	+119.7

9 and 10 are entirely incommensurate with the cost of the Sanatogen. All of the rats showed a vigorous growth and exceeded the average weight expected for rats of their respective ages, based on the long series of observations of Osborne and Mendel, as shown in Table 4.

TABLE 4.—WEIGHT OF RATS 7 TO 10 COMPARED WITH AVERAGE WEIGHT OF RAT OF SAME AGE

Rat	Age in Days	Final Weight, gm.	Average Weight for Rat of Same Age, gm.
7	148	237	204
8	138	214	201
9	145	247	204
10	134	227	197

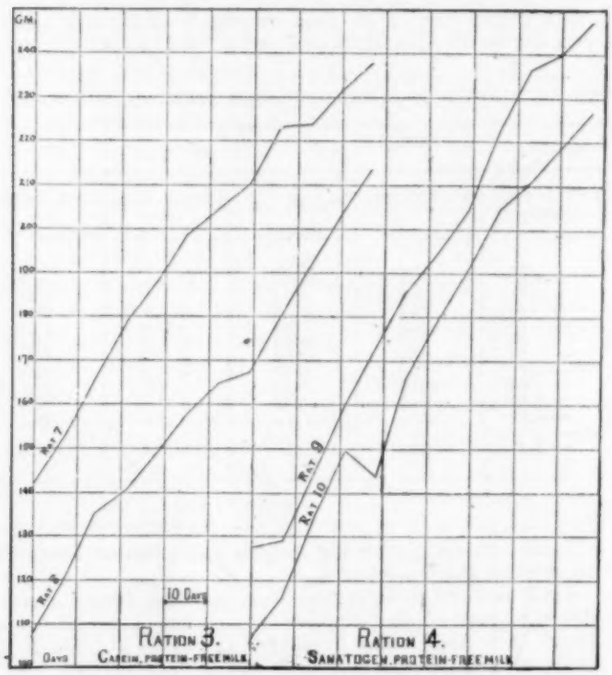

Chart 3.—Growth curves of Rats 7, 8, 9 and 10 on Rations 3, Casein, protein-free milk, and 4, Sanatogen, protein-free milk.

Rat 13 suffered more or less from diarrhea throughout the whole experiment, and Rat 16 suffered similarly during the first two weeks.

The results secured by Rations 5 and 6 compared with Rations 3 and 4, the only difference being that natural protein-free milk was used in the latter and artificial protein-free milk in the former, are most striking. Such results were anticipated from the experience of Osborne and Mendel in feeding similar materials. All of my rats, except Rat 13, a casein rat, showed a decided loss in weight after five weeks' feeding on rations containing artificial protein-free milk. These losses amounted to 19.7, 9.0, 23.1, 6.7 and 27.6 gm., whereas rats fed on the same rations, except for the form of protein-free milk, gained, during the same period of five weeks, 56.3, 49.6, 57.8 and 59.1 gm. The fact that one casein rat fed on the artificial protein-free milk showed a substantial gain is without significance, as such exceptions to the general rule occur occasionally, and, furthermore, this rat also during the last week of the experiment likewise lost weight. The extent of these losses compared with what the average normal male rat weighs at a corresponding age is shown in Table 7.

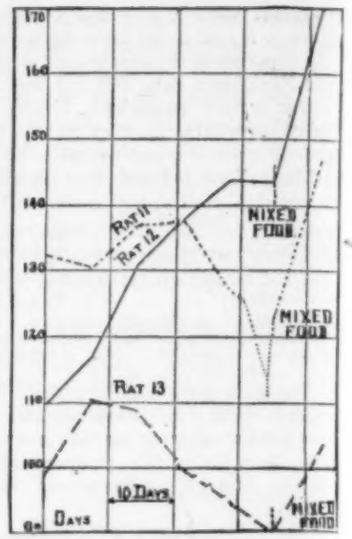

Chart 4.—Growth curves of Rats 11, 12 and 13, on Ration 5: Casein, artificial protein-free milk.

TABLE 5.—WEIGHTS OF RATS FED RATION 5, CASEIN, ARTIFICIAL PROTEIN-FREE MILK*

Date	Rat 11		Rat 12		Rat 13	
	Weight, gm.	Gain or Loss, gm.	Weight, gm.	Gain or Loss, gm.	Weight, gm.	Gain or Loss, gm.
3/9	132.1	.....	110.0	.....	99.0	.....
3/16	130.4	— 1.7	116.8	+ 6.8	110.3	+11.3
3/23	136.8	+ 6.4	130.8	+14.0	108.6	— 1.7
3/30	137.1	+ 0.3	138.0	+ 7.2	100.2	— 8.4
4/6	127.1	—10.0	143.9	+ 5.9	95.5	— 4.7
4/13	112.4	—14.7	143.6	— 0.3	90.0	— 5.5
Total	.....	—19.7	.....	+33.6	.....	— 9.0
4/20	146.7	+33.7	170.7	+27.1	104.0	+14.0

* Date 4/20 covers use of mixed food.

TABLE 6.—WEIGHTS OF RATS FED RATION 6.—SANATOGEN, ARTIFICIAL PROTEIN-FREE MILK*

Date	Rat 14		Rat 15		Rat 16	
	Weight, gm.	Gain or Loss, gm.	Weight, gm.	Gain or Loss, gm.	Weight, gm.	Gain or Loss, gm.
3/9	118.4	.....	111.3	.....	101.3	.....
3/16	126.2	+ 7.8	116.2	+ 4.9	100.0	— 1.3
3/23	126.6	+ 0.4	123.4	+ 7.2	98.0	— 2.0
3/30	124.7	— 1.9	123.3	— 0.1	98.7	+ 0.7
4/6	110.2	—14.5	112.3	—11.0	88.7	—10.0
4/13	95.3	—14.9	104.6	— 7.7	73.7	—15.0
Total	.....	—23.1	.....	— 6.7	.....	—27.6
4/20	130.3	+35.0	135.3	+30.7	106.4	+32.7

* Date 4/20 covers use of mixed food.

That these losses in weight were not due to any inherent weakness in the rats is shown by the fact that by feeding Rats 11 to 16 for one week after the termination of the experiment with Osborne and Mendel's

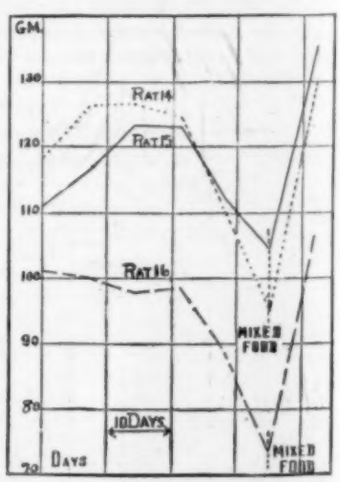

Chart 5.—Growth curves of Rats 14, 15 and 16, on Ration 6: Sanatogen, artificial protein-free milk.

"mixed food" (a mixture of dog bread, sunflower seeds, vegetables and meat) very large gains were secured in every instance, ranging from 14 to 35 gm.

The growth curves for Rats 7 to 16 are shown in Charts 3, 4 and 5.

TABLE 7.—WEIGHT OF RATS 11 TO 16 COMPARED WITH AVERAGE WEIGHT OF RAT OF SAME AGE

Rat	Age, Days	Final Weight, gm.	Average Weight of Rat of Same Age, gm.
11	106	112	167
12	106	144	167
13	99	90	162
14	106	95	167
15	92	105	153
16	96	74	158

To conclude, *a comparative feeding of four male white rats during eleven weeks, showed, if anything, a slightly greater, but insignificant, increase in weight for Sanatogen over commercial casein. In a ration in which artificial had been substituted for natural protein-free milk, Sanatogen showed no advantage over commercial casein in checking the failure in weight of the rats.*

BACTERIOLOGY OF CHOLECYSTITIS AND ITS PRODUCTION BY INJECTION OF STREPTOCOCCI *

E. C. ROSENOW, M.D.
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The bacteriology of cholecystitis, as worked out heretofore, is largely the bacteriology of the contents and not the tissue of the gall-bladder wall. (The mechanism of infection of the gall-bladder and the production of gall-stones have not been fully worked out experimentally.) In a previous paper I pointed out that when streptococci, from various sources, attain a certain grade of virulence, they are prone to produce on intravenous injection cholecystitis and gall-stones, with large numbers of streptococci as the nuclei. In this connection the observations in the following case are of interest:

A woman, aged 62, with infected tonsils, high blood-pressure, and a chronic arthritis, involving chiefly the small joints of the hands, contracted a "cold" and acute tonsillitis. Ten days later she developed a typical acute attack of cholecystitis. The symptoms continued for three weeks without jaundice. Then the pain shifted and the next day jaundice appeared, which deepened for a week and then gradually subsided. Jan. 19, 1914, five weeks after the beginning of the attack, an operation was made by Dr. Bevan. There was found a healing area, 1 by 1.5 cm., of necrosis at the fundus; but otherwise the gall-bladder was nearly normal.

The bladder was moderately distended with bile containing mucus and three soft "mulberry" cholesterin stones. Cultures from the bile were sterile; streptococci, colon bacilli and gas bacilli developed from the center of two of the stones, while from the emulsion of the excised piece of tissue only streptococci developed. The streptococci from both of these sources produced grayish-green, moist, non-hemolyzing colonies on blood-agar and marked precipitation and acidity on dextrose-agar. They formed chains of diplococci and a large number of round cocci, which were often in masses, like some of the strains obtained from gastric ulcer. Sections from the wall of the gall-bladder, stained by Gram's method, showed a moderate number of streptococci.

Dog 57, of medium size, was injected intravenously, January 22, with the growth of the streptococcus from the wall of the gall-bladder in 90 c.c. of ascites-dextrose broth, suspended in 7 c.c. of sodium chlorid solution.

January 24: Lame in the left hind leg. Fluid from knee-joint turbid. Cultures were made.

January 26: Cultures from knee-joints showed four, green-producing, non-hemolyzing streptococci.

January 30: Found dead. Acute cholecystitis, enteritis, localized pancreatitis and nephritis. The wall of the gall-bladder was edematous, from 3 to 6 mm. thick; the mucous membrane was velvety, and covered in areas with a loosely adherent exudate; the cavity was distended with brownish fluid, containing masses of pus and mucus; pressure on the gall-bladder failed to discharge bile until the plug of the mucopus in the diverticulum was removed by passing a probe and by making firm pressure; a moderate number of dark concretions, of the consistency of putty, were found in the masses of mucopus in the gall-bladder and in the plug in the diverticulum. Smears from the crushed concretions, washed repeatedly in sodium chlorid solution, showed many streptococci. The liver was normal; there were whitish streaks in the medullary portion of the kidney, most numerous and largest near the pelvis, where a number of small ulcers were found; the cortex appeared normal; the urine contained leukocytes, some albumin and bile, and was highly acid; the mucous membrane of the lower end of the small intestine was hyperemic and covered with exudate in which were many streptococci; the fluid in the knee-joints was slightly turbid; the stomach, large intestine, adrenals, thyroid, lungs and heart were normal.

The bile, the plug of mucus and the wall of the gall-bladder yielded large numbers of streptococci. The joint fluids and the pelvis of the kidney gave a few colonies of non-hemolyzing streptococci. The blood remained sterile. Sections of the wall of the gall-bladder showed marked thickening and degeneration of the mucous membrane. Gram-Weigert stains show a large number of streptococci, especially in the submucosa.

The fluid contents of the gall-bladder, the center of stones, and particularly parts of the wall of the gall-bladder of twenty-nine cases of cholecystitis have now been studied according to my new method.[1]

I wish here to express my very great appreciation for the opportunity afforded me recently at the Mayo Clinic where most of the cases occurred.

In five cases, the cultures from the wall were negative and in these the microscopic evidence of any changes was slight. In the remaining twenty-four cases, in all of which increase in thickness and other changes were more marked, streptococci were isolated in all but three and in pure culture in ten. In sixteen cases streptococci were found in the wall when the contents were sterile or contained only the colon bacillus. The colon bacillus was found with the streptococcus in only ten cases, once in pure form, once in association with the *Bacillus welchii*, and once with the staphylococcus. *Bacillus mucosus* was found in two cases of very acute cholecystitis. In two, diphtheroid bacilli were found and in one the fusiform bacillus was found. The fluid contents, usually bile, were examined in twenty-six cases: In twelve it was sterile; streptococci were found six times, colon bacilli nine times; staphylococcus three times; the *Bacillus mucosus* twice, and the fusiform bacillus once. The center of gall-stones have been examined in thirty cases. Only two proved sterile; from the rest, streptococci were isolated in all but three, fourteen times in pure form and five times in association with the colon bacillus; the center of the stone, in one case,

1. Rosenow, E. C.: The Newer Bacteriology of Various Infections as Determined by Special Methods, THE JOURNAL A. M. A., Sept. 12, 1914, p. 903.

showed the typhoid bacillus in pure form while the center of two stones and the wall of the gall-bladder in a case with a clinical diagnosis of typhoid cholecystitis showed streptococcus in pure culture; in two cases the center of stones contained colon bacillus and the *Bacillus welchii*, and one the latter organism only; in some instances, streptococci were demonstrable in smear preparations from the center. Cultures from other portions of stones were usually sterile. The adjacent lymph-glands were examined in five cases. Streptococci were found in four, pure in three cases and in association with the *Bacillus welchii* in one case. In the cases in which a pure culture of the streptococcus was obtained from the tissue of the gall-bladder there seemed to be a definite relation between the number of colonies which developed and the degree of change, especially if relatively recent inflammation was present.

A comparison of the results obtained from the bile, the stones and the wall of the bladder, in the individual cases, shows that a bacteriologic examination of the fluid contents gives trustworthy results only in the acute stage of the disease; during convalescence and in chronic cholecystitis the results are of little value and may be misleading. In chronic cholecystitis the bacteriology of the center of the stones is similar to that of the wall of the bladder.

The effect of the various organisms on intravenous injection has been tested in dogs and rabbits. All of the five strains of streptococci isolated from the wall of the bladder, one strain from an adjacent lymph-gland, and two out of five strains from the center of stones showed a marked affinity for the gall-bladder soon after isolation, and frequently produced no lesion elsewhere. Varying doses produced cholecystitis in nearly every animal injected. The severity of the lesions in the animals often corresponds to that found in the cases from which the strains are isolated. This affinity is soon lost, however, on cultivation as well as on animal passage. Five strains of colon bacilli, the one strain of typhoid bacillus, and one strain of the *Bacillus mucosus* in no instance showed any tendency to localize in the gall-bladder. It was not possible to produce cholecystitis with the streptococci by injecting them into the portal system, even with strains which produced cholecystitis practically every time when injected into the vein of the leg, and only localized cholecystitis developed at the point of puncture when the injection was made directly into the gall-bladder. In the animals which lived for a time, there was not infrequently observed the beginning formation of gall-stones containing numerous streptococci similar to the conditions found in several of the patients.

The strains of streptococci from the different cases show a striking similarity and resemble closely those from ulcers of the stomach. They produce either small, moist, grayish-brown or grayish-green, non-adherent, non-hemolyzing colonies on blood-agar; they ferment mannite, lactose and salicin; they produce short chains in liquid mediums with clumps of cocci somewhat resembling staphylococci; they are of a rather low virulence, yet somewhat more virulent than strains from gastric ulcers, as manifested by their resistance to phagocytosis, by the smaller dose necessary to kill, and by the fact that, when cultivated for a time, they acquire affinity for the stomach and duodenum while the strains from ulcers, when passed through one or two animals, acquire affinity for the gall-bladder at the same time as they lose affinity for the stomach.

On animal passage, two of the strains produced both cholecystitis and pancreatitis, the lesions in the latter being most marked in the head of the pancreas.

The lesions most commonly observed other than cholecystitis, when these strains are injected especially in rabbits, are: ulcer of the stomach, hepatitis about the gall-bladder, myositis and myocarditis, arthritis, appendicitis and colitis.

The common presence of streptococci in the wall of the infected gall-bladder and in the center of gall-stones, often in pure culture, while absent from the bile and their affinity for the gall-bladder in animals are strong evidence that streptococci are the cause of cholecystitis in man far more frequently than believed and serves to explain the good results reported by some as following cholecystectomy in cases of myocarditis, arthritis and other conditions.

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END-RESULTS IN CASES OF GASTRIC AND DUODENAL ULCER *

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In 1899 Dr. Robert B. Greenough and I[1] reported on the condition of 187 patients with gastric ulcer treated at the Massachusetts General Hospital for the preceding ten years. We were able to show that "of 114 patients, 80 per cent. were discharged cured or relieved, but at the end of an average period of five years only 40 per cent. remained well." The mortality at the same time (due to gastric disease) was 20 per cent. Among the men it was 30 per cent., in women 9 per cent. The excessive mortality of ulcer among men, its occurrence in life a decade later than in women, and the absence of fatal cases of hemorrhage in women, point to a difference of the ulcer in the two sexes. . . . The failure of medical treatment to effect a lasting cure in 60 per cent. of the patients indicates the need of surgical intervention in other than emergency cases of this disease." These figures aroused wide-spread comment, because gastric ulcer had previously been considered a disease in which cure was the rule.

Fifteen years have intervened since the preceding compilation. Revolutionary changes have taken place in the knowledge and in the treatment of the disease. Duodenal ulcer is now considered as frequent in occurrence as gastric ulcer. Undoubtedly, in the previous report, a considerable number of duodenal ulcers were classified as gastric. In this series an attempt has been made to distinguish between the gastric and duodenal ulcers. This was difficult even with the knowledge gained in the operating-room. As a matter of fact, my personal division of the cases showed them to be within three of being divided equally. Surgery has wrought the other change in our attitude. Whereas, in the 187 cases occurring at the Massachusetts General Hospital in the ten years ending in 1898, but four patients were operated on,

* Read before the Section on Practice of Medicine at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

1. Greenough and Joslin: Gastric Ulcer at the Massachusetts General Hospital, 1888-1898, Am. Jour. Med. Sc., August, 1899.

to-day operation is a common event. Justification, therefore, exists for another report on the end-results of treatment of duodenal and gastric ulcer, even apart from the fact that very favorable statistics concerning the present treatment of the disease are again being published.

The purpose of this paper is to call attention to the outcome, after the lapse of many years, of a group of cases of gastric and duodenal ulcer. It is not the intention to emphasize the medical or surgical treatment, but to show end results. Some of the cases were treated by me, but as a rule they were seen in consultation with physicians. The medical treatment of ulcer is sufficiently well known but not sufficiently well carried out.

It has been possible to ascertain the present condition of 91 per cent. of all the cases seen by me in private practice during the last sixteen years. As the whole value of the paper rests on this fact, we are more than glad to take this opportunity to acknowledge that so large a percentage of cases could never have been traced without the persistence of my secretaries, Miss Helen Leonard and Miss Florence Newnham. I am also greatly indebted to Dr. Hugh P. Greeley, without whom the cases could not have been selected and analyzed and to whose critical judgment I owe much.

METHOD OF SELECTION OF CASES

All cases showing digestive symptoms of any kind from 1898 to date, including even gall-stone cases, were collected from my records and analyzed for this report. This was necessary because to-day duodenal ulcer would be recognized in cases in which it was not recognized ten years ago. A number of cases of duodenal ulcer were thus found which were not originally so diagnosticated. The basis on which the diagnosis of ulcer rested was (1) the history, with especial attention to the symptoms of hyperacidity, pain, hemorrhage, perforation, the duration of the case and the after-history; (2) the knowledge acquired by surgery; (3) necropsy reports.

The total number of cases was 234. Table 1 shows the number of cases seen each year.

TABLE 1.—NUMBER OF CASES SEEN EACH YEAR

Year	No.	Year	No.
1898	3	1908	14
1899	1	1909	8
1900	3	1910	15
1901	4	1911	28
1902	9	1912	30
1903	17	1913	31
1904	12	1914	8
1905	23		
1906	14	Total	234
1907	14		

The present condition of the patient in 213 cases, or 91 per cent., is known.

SEX; AGE; AT ONSET AND DURATION

The number of male patients was 142, and the number of female patients was 92. These figures form an interesting contrast to the Massachusetts General Hospital series before cited, for in that series there were 5 females to 1 male.

The average age of the male patients when first seen was 45 years and 2 months, but this does not represent the age at which the symptoms of ulcer began. The average age of onset of the ulcer in the males was 38 years and 8 months. The average age of the female patients when first seen was 36 years and 4 months, and the onset began at 30 years and 10 months; in other words, symptoms had existed for five years and six months, and at an age eight years earlier than that of the males. The statement is approximately correct that six years intervened between the onset of symptoms of all the cases and the time they first came for treatment. Undoubtedly this interval was greater rather than less. The duration of the disease in patients at present not relieved is eleven years. The duration in many cases was, in the patients' words, "as long as I can remember," but these could not be included in our tabulation because a definite time of onset was not known. The duration between onset and operation in thirty of the eighty-two patients surgically treated was ten years. In other words, the patients came to the surgeon, at an average, four years later than to the physician. The importance of the long duration of this disease cannot be too much emphasized. It lends support to skepticism about the high percentage of cures so frequently reported by physicians and surgeons. Twenty-one of the patients were 60 years old or over when first seen. One patient was successfully operated on at the age of 86, for which the entire credit is due to Dr. E. A. Codman, who, remembering the patient's indigestion, discovered the ulcer during an emergency operation for a twisted ovarian pedicle.

SYMPTOMS

The severity of the disease is readily seen from the frequency of severe symptoms. Vomiting was present in 147 cases, 63 per cent. Pain existed in 184 cases, 74 per cent. Hyperacidity, as shown by the symptoms, or in a large number of cases by gastric analysis, appeared 134 times, or 54 per cent. Hemorrhage was noted in 71 cases, 30 per cent.; but this figure is low because these statistics of hemorrhage were compiled from facts learned at the first examination, whereas, occasionally, hemorrhage occurred later for the first time. Hemorrhage was occasionally observed at a time after operation when the trauma of the operation could be excluded.

Perforation developed 9 times, 4 per cent. Six of these patients were operated on, and two recovered. Of the remaining 3 patients, 2 died and 1 recovered, to die five years later of pulmonary tuberculosis. This patient, following perforation, coughed up pus for a considerable length of time.

Stasis was present in 41 cases, 17 per cent. To me it was a surprising fact that 3 of these patients with marked stasis, after periods of nineteen, fourteen and ten years respectively, must be considered as relieved and yet without surgical treatment.

RESULTS OF TREATMENT

The results of treatment are classified under the headings of "At Present Well," "Relieved," "Unrelieved," and "Dead." The term "At Present" is inserted because in too many cases in which the patients are considered cured, the ulcer recurs. Undoubtedly, a considerable proportion of patients now well will later develop symptoms. The term "Relieved" in this paper is liberally interpreted. Many patients recorded as relieved are merely relieved, and acknowledge that this condition is only attained by rest and a careful diet. In this group are also included many who before reaching this improved stage had a recurrence of symptoms. The term "Unrelieved" is self-explanatory. Under the heading "Dead," care

has been taken to avoid the error of crediting deaths to medical or surgical treatment when these were simply intercurrent and had no relation to digestive trouble. There were 11 such instances. Two patients died of pneumonia, two of cancer of the colon and two by accident, while apoplexy, tuberculosis, cirrhosis of the liver, brain-tumor and cancer of the breast each claimed one.

Medical Treatment: The total number of medical cases traced was 131, of which 51 patients are well at present, 55 are relieved, 16 unrelieved, and 9 dead. Three of the 51 patients now well have had a recurrence of symptoms after being first treated, and of the 55 patients relieved, 19 have had such recurrence. In other words, of the 131 medical cases followed to the present time, 39 per cent. of the patients were cured, 42 per cent. relieved, 12 per cent. unrelieved, and 7 per cent. dead.

The causes of death of the 9 medically treated patients were as follows:

Cancer of stomach 2, cancer of duodenum 1, perforation 2, of which one was a typical case of paroxysmal vomiting in a child, hemorrhage 2, and inanition 2.

TABLE 2.—RESULTS OF MEDICAL TREATMENT IN 131 CASES OF GASTRIC AND DUODENAL ULCER

At Present	Number	Per Cent.
Well	51	39
Relieved	55	42
Unrelieved	16	12
Dead	9	7
		100

Surgical Treatment: It would be manifestly unfair to report the results of the surgical treatment without emphasizing that:

1. A surgical case means a medical failure. In all of the 82 surgical cases the patients were operated on because medical treatment had failed.

2. Among the surgical failures are necessarily included two types of cancer cases—those cases of ulcer in which the patients die, after months or years, from cancer, and also cases in which there might be a difference of opinion as to whether these cases should have been excluded from the ulcer series on the ground that they were cancer from the outset or had become cancer at the time of operation.

3. Several of the cases of perforation were transferred to the surgeon at a time when the whole responsibility really rested on the medical attendant.

4. A number of patients were transferred to the surgeon for operation debilitated by inanition or prolonged hemorrhages.

In drawing my own inferences from the surgical treatment of the eighty-two surgical cases, I should deduct from the group of twenty-six surgical deaths nine cases of cancer of stomach or duodenum for example, one of these patients at 75 years of age with a history of ulcer of twenty years' duration, showed cancer when operated on by the surgeon. He was given complete relief by gastro-enterostomy for a year and three-quarters and died painlessly six months later, yet that case although surgically classified should not be considered a surgical failure. I would also deduct two cases of perforation, because they occurred at a time when, even without perforation, the patient was *in extremis*, and also one case because of inanition of the patient. It is true that twenty-six of the eighty-two patients operated on are now dead, but with the deductions which I feel are justified, this is reduced to fourteen, a surgical mortality of 20 per cent. In ten of the surgical cases, 12 per cent., the patients are still unrelieved. Thirteen, or 16 per cent. are relieved, though before reaching this half-happy stage after the surgical intervention, five had recurrence. Thirty-three, or 40 per cent. are now well, and of this number only three have had recurrence since operation. It will thus be seen that despite the handicaps which were heaped on the surgeon, his percentage of cures, 40 per cent., is approximately the same as that of the physician. If we discard the twelve deaths for which the surgeon might well not be held responsible, 47 per cent. of the surgical patients are well.

But I will now ask you to look at the matter from another point of view. If one should add all the surgical cases to the medical cases, for they were medical cases before they were surgical in this particular series, and then classify these surgical cases as medically unrelieved, we should then have 213 medically treated patients, of whom there are but 51, or 24 per cent., who recovered under medical treatment! The remainder, 162 patients, 76 per cent., were only partially relieved, unrelieved, dead, or forced into the surgeon's hands. It is my impression that this is the correct way in which to regard the medical treatment of gastric ulcer. In other words, medicine cures only approximately 24 per cent. of the ulcer patients, and of these there is a considerable chance for later relapse. Surgery helps out medicine and adds another 15 per cent. to those cured. In other words medicine and surgery together have given back complete health to 39 per cent. of 213 ulcer patients seen or treated by me in the last sixteen years.

TABLE 3.—RESULTS OF SURGICAL TREATMENT IN 82 CASES OF GASTRIC OR DUODENAL ULCER

At Present	Number	Per Cent.
Well	33	40
Relieved	13	16
Unrelieved	10	12
Dead	26	32

TABLE 4 (REVISED FROM THE FOREGOING).—RESULTS OF SURGICAL TREATMENT IN 70 CASES OF GASTRIC OR DUODENAL ULCER TREATED SURGICALLY *

At Present	Number	Per Cent.
Well	33	47
Relieved	13	19
Unrelieved	10	14
Dead	14	20

* This table was compiled from the foregoing table after the deduction of 12 deaths for which the surgeon was not responsible.

The causes of death in the surgical cases were as follows:

Cancer of stomach 7, cancer of duodenum 2, soon after operation 7, perforation 3, abscess of lung 2, empyema 2, pneumonia 1, pancreatic fistula 1, embolus 1.

It is noticeable that there is no case of jejunal ulcer; in fact, no patient with jejunal ulcer occurred in the series. In but five of the eighty-two cases was it necessary to operate twice.

The number of surgeons who operated on these 82 patients was 36. Two surgeons operated on 37 patients, and 4 surgeons on 15 others, while 30 patients were operated on by as many different men.

The type of operation was as follows:

Gastro-enterostomy	61
Infolding the ulcer, drainage, adhesions and exploratory laparotomy	15
Resection	3
Unknown	3

It is noticeable in how few instances the ulcer was resected. I must record that one of the severest cases was the one in which fully one-third of the stomach was removed, and this operation was one of the most successful of the group. The case is particularly interesting in that the reason for this extensive resection was due to the report of an eminent pathologist that cancer was present, but on the following day his careful study of the section removed revealed no cancer. It is not appropriate for the physician to comment on the type of operation. The physician has enough responsibility of his own in the treatment of ulcer of the stomach and duodenum.

In Table 5 the combined results of medical and surgical treatment are given.

TABLE 5.—COMBINED RESULTS OF MEDICAL AND SURGICAL TREATMENT IN 213 CASES OF GASTRIC AND DUODENAL ULCER OBSERVED DURING THE LAST SIXTEEN YEARS

Present Condition	Number	Per Cent.
Well	84	39
Relieved	68	32
Unrelieved	26	12
Dead	35	16

CANCER SUBSEQUENT TO ULCER OF THE STOMACH AND DUODENUM

Twelve, or 6 per cent. of the 213 patients have up to the present time died of cancer. The statistics on this point, however, are complete only for the forty-six patients now dead. Of these, 26 per cent. succumbed to cancer. In other words, one out of every four of the patients with ulcer of stomach or duodenum, which have been followed to their death, died of cancer.

CONCLUSIONS

1. In a study made of 234 consecutive cases of gastric and duodenal ulcer seen in private practice during the last 16 years, 213 cases, 91 per cent., were traced to date.

2. Of these cases 142 were in men, 92 in women.

3. The average age in men was 45 years and 2 months when first seen, but the age at onset was 38 years and 8 months. The average age in women was 36 years and 4 months, but at onset 30 years and 10 months. The average duration of the ulcer in the patients still unrelieved is eleven years; the average duration of the ulcer before the cases reached the surgeon, ten years.

4. There were 131 patients who were treated medically throughout, and of these at present 51, or 39 per cent., are well, 55, or 42 per cent., are relieved, 16, or 12 per cent., are unrelieved and 9, or 7 per cent., are dead.

5. Of the patients who were operated on when medical treatment had failed, 82 were traced and of these 33, or 40 per cent. are well; 13, or 16 per cent. are relieved; 10, or 12 per cent. are unrelieved, and 26, or 32 per cent. are dead.

6. Deducting 12 deaths for which the surgeon should not be held responsible there are 70 surgical cases in which 33 patients, or 47 per cent. are well; 13, or 19 per cent. relieved; 10, or 14 per cent. unrelieved, and 14, or 20 per cent. dead.

7. The combined medical and surgical results show at present: well, 84 patients, 39 per cent.; relieved, 68 patients, 32 per cent.; unrelieved, 26 patients, 12 per cent.; dead, 35 patients, 16 per cent.

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GASTRIC CANCER IN THE YOUNG

A STUDY OF SIXTEEN INSTANCES IN PATIENTS UNDER THE AGE OF THIRTY-ONE *

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The sixteen instances of gastric cancer in the young forming the basis of this report were found in my study of the records of 721 pathologically demonstrated cases of cancer of the stomach at the Mayo Clinic and at Augustana Hospital. It is thought that their analysis will demonstrate certain facts of value in anticipating or detecting this grave malady at an age when it is not commonly suspected.

Those who wish to familiarize themselves with the literature on this subject may refer to the excellent monographs of Welch,[1] Osler and McCrea,[2] and Dock.[3]

A summary of previous reports on gastric cancer in the first three decades may be of service. Six instances (often rather dubious as to cancer) have been recorded below the age of 10. In the second decade, thirteen cases are described. In but eight of these were there reliable pathologic reports. In the thirteen instances occurring in the third decade, few descriptions are accompanied by pathologic findings. Many of the patients in this group, however, appeared to have been affected with a gastric malady, seemingly malignant.

INCIDENCE

The relative frequency of gastric cancer in the young varies with the individual series studied. In a small series, as, for example, the beautifully analyzed 150 cases of Osler and McCrea, the proportion was 4 per cent. In a large series, collected for statistical purposes from various non-related sources throughout the world, as in the 2,038 instances tabulated by Welch, the ratio is 2.8 per cent. In my own group of 721 consecutive cases, examined by a uniform method (and a distinctly American experience), the percentage was 2.2 per cent.

Sex: There were nine females and seven males. Age: The youngest patient was aged 18; the oldest just past 30 years. The average age of the series was 27.8 years. Status: Twelve patients were married. In two instances (12 per cent.) there was a family or blood-relationship history of cancer. Only twice were more than ordinary indulgence in tobacco or alcohol noted. Apparently occupation had no eitologic significance.

DURATION OF ALL GASTRIC COMPLAINTS

Most useful facts are brought out by study of this phase. The shortest time was four months, while in one instance the gastric disturbance had persisted for fifteen years. The average length of time of the disability was 4.2 years.

Consideration of the earlier part of those histories in patients exhibiting protracted gastric complaints not infrequently reveals the fact that there is in the

* Read before the Section on Practice of Medicine at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

* Because of lack of space this article is abbreviated in THE JOURNAL by the omission of a table. The complete article appears in the Transactions of the section and in the author's reprints. A copy of the latter will be sent by the author on receipt of a stamped, addressed envelope.

1. Welch: Proceedings Boston Society for Medical Improvement, v, Appendix, p. 109.
2. Osler and McCrea: Cancer of the Stomach, Philadelphia, 1900, p. 16.
3. Dock: Am. Jour. Med. Sc., June, 1897, p. 665.

early stages a different clinical presentation of the disease than is exhibited towards its end. It would seem that the observation of occasional cases of cancer in which the duration of the gastric history had been long drawn-out, doubtless led such clinicians as Dock[3] and Mathieu[4] to venture the opinion that cancer of the stomach in early life runs a somewhat slow course. This opinion appears well-founded if one considers both the "pre-cancerous" and the evidently cancerous portions of the history.

TYPES OF GASTRIC HISTORIES

In respect to types the histories divide themselves quite sharply into two groups: Group 1 includes cases in which there appeared a gastric affection, pernicious in nature and progressively downward in course, in patients in whom there had been no previous gastric ailment. Group 2 comprises a number of cases in which, previous to the time at which they came under observation for a gastric disease of a malignant kind, there had been gastric complaints which frequently conformed to the type which we call clinically "peptic ulcer."

Group 1.—Two of the sixteen cases studied fall into this class. The average duration of all symptoms was 4.5 months. In these two cases the disease was from its inception progressively and perniciously downward in course and type, and there was no alteration in the character of the affection. There were, clinically, rapid emaciation, continuous abdominal discomfort, early onset of vomiting, development of epigastric tumor and departures from the normal in the test-meal analysis. Laparotomy revealed large, inoperable growths, with extensive involvement of the lymph-nodes and pancreas. One patient died within twelve days following operation; the other lived a year.

Group 2.—This includes fourteen cases. These patients had been affected for an average time of 4.8 years with some gastric malfunction. In type the early part of their affection had been roughly classed among the "dyspepsias." A careful analysis of the character of these dyspepsias reveals useful facts. In five instances (36 per cent.) the gastric complaint and course had fully satisfied the symptom-complex which we ascribe clinically to peptic ulcer. In four cases (25 per cent.) so-called ulcer features were definite at some stage in the early period (in one instance in this group there was frank gastric hemorrhage). In four other cases (25 per cent.) the long-term history previous to onset of evident malignancy was that of peptic ulcer of irregular type. In the remaining case gall-stone attacks were typical through four years, and the stones were later found at laparotomy.

The second part of the histories of cases making up Group 2 was typical of gastric malignancy. While this phase differed widely in character from the early manifestations, yet it could in nowise be distinguished clinically from the whole course of the ailment in the two cases making up Group 1. If one had not carefully analyzed the early histories of these fourteen cases in Group 2 he could have in no way showed their clinical variation from cases in Group 1. The period of evident malignancy in Group 2 averaged 7.8 months in duration. The most rapid progress was three weeks; that most extended nearly three years.

It might be useful to emphasize the fact here that of this group of gastric cancer cases in the young with long-time histories, 86 per cent. satisfied or approximated our present-day clinical complex of peptic ulcer at some time during a period averaging 4.8 years, previous to the time when the course became malignant; that during this time medical treatment availed nothing and the surgical opportunity for cure was usually neglected; that the cases in this group, due to some unknown cause, did not pursue a course of chronicity of benign type, but later evidenced malignant pointings, and that the malignant course of the cases in this group exhibited an average duration nearly half again as long as occurred in cases of Group 1 in which no previous gastric disorder had been observed.

CLINICAL DATA

Appetite.—In six instances (38 per cent.) the appetite was poor. In the remaining cases it was usually fair.

Bowels.—All cases exhibited some degree of constipation.

Weight Loss.—In the two instances of short-term cancer, (the so-called "primary cancers"), the average loss of weight was 17 pounds. In the early period of the group of cases with long-term histories, weight loss generally occurred during the "spells" of the disability, but was rapidly regained during the succeeding quiescent stages. In some of these spells the weight loss ran as much as 35 pounds. In the late stage of cases of this type (the malignant period) the weight loss averaged 31 pounds. It was continuous and accompanied by other evidences of cachexia. Some rapid weight losses were observed, namely, 20 pounds in two weeks.

Abdominal Pain or Distress.—In some degree, this was noted in all patients. It was commonly located indefinitely in the epigastrium, but occasionally the complaint was of distress in the back or the high "pit." In two instances pains of so severe a degree and of such spasmodic character were noted that perforation was believed to have taken place.

In the two cases comprising Group 1 above ("primary cancers") the pain was never severe, never definitely localized, was continuous, but was generally aggravated by the ingestion of food or drink. In these instances the common pain relief was obtained by limiting the amount of ingested food, vomiting at the height of distress, and, occasionally, by alkalies.

Of the fourteen cases included in Group 2 above (those in which the patients had had gastric distress before malignancy became evident), twelve (85 per cent.) had pain in "spells" or "attacks." In seven instances, the pain at such times had borne fairly definite relation to food ingestion; in four instances, even when malignancy had supervened, the food relief of pain persisted. In ten cases former food relief of pain had changed to food aggravation of pain, as the malignant process became manifest. In this group of fourteen cases the common modes of pain relief were vomiting, lavage, limited or varied diet, alkalies, food intake and some form of opiate.

Abdominal Tenderness.—This was exhibited on palpation in all instances. In 38 per cent. it was located generally in the epigastrium. In three instances, the maximum tenderness was in the left epigastrium. In rare instances was abdominal tenderness, such as is characteristic of chronic ulcer of the perforative type, noted even when laparotomy showed that the peritoneum had become extensively involved.

4. Mathieu: Semaine méd., 1895, p. 225.

Epigastric Tumor.—Tumor was palpated in six cases (38 per cent.) in the entire series (See Table). In but one instance was a large mass demonstrable. In the cases presenting no definite tumor, peculiar stiffness of the abdominal wall with a sense of deep resistance was frequently observed.

Four times free fluid was shown to be present in the abdominal cavity before laparotomy. These were inoperable cases. In three, metastases, as in the left supraclavicular region and pelvis, were noted before operation. These patients had hopeless involvement.

Eructations and Pyrosis.—These were commonly noted, particularly when gastric motility had been interfered with.

Vomiting.—Vomiting, with or without nausea, was observed in all the cases at some time (usually in the terminal stage) in the course of the disease. In the two "primary cancers," vomiting came on daily soon after taking food, was large in quantity, rancid in odor, but never "coffee-colored."

In the fourteen instances in which malignancy had terminated a long-term gastric history, vomiting occurred from one to eight hours after meals; in but one instance was it "coffee-colored;" in all instances it contained food particles, was of a rancid odor and relieved abdominal distress. In eight cases "delayed" vomiting was observed. Such sign was usually associated with pyloric stenosis and huge, dilated stomach.

LABORATORY DATA

Blood.—In the fourteen instances in which the hemoglobin was estimated, it averaged 66 per cent. The range was from 25 per cent. to 70 per cent.

Stool.—In ten instances (62.5 per cent.) altered blood was chemically demonstrated by the benzidin or the guaiac tests.

Test-Meals.—In fifteen instances facts of much interest were obtained by this mode of examination of gastric function. One case returned no information by test-meal analysis because the stomach-tube could not be advanced beyond the cardia. There was obstruction due to extensive local growth.

Gastric Emptying Power.—In eleven cases (73 per cent.) motility was interfered with and there was retained food at the end of twelve hours. In such instances, dilatation of the stomach of various degrees had invariably occurred.

Gastric Acidity.—In no case was achylia shown. The average *total acidity* was 59. It ranged from 28 to 64.

Free hydrochloric acid was absent in but one instance. This was a case of fulminant, primary cancer. The average free hydrochloric acid estimation for the entire series was 26. It ranged from as low as 3 to as high as 60. The highest free hydrochloric acidities were noted in association with large, cancerous ulcers.

Combined hydrochloric acid and acid salts averaged 18.1. It ranged from 0 to 50.

Lactic acid was demonstrated by the modified Uffelmann test in six cases (40 per cent.).

Altered blood was proven by chemical test in gastric contents twelve times (80 per cent.).

Microscopic Examination of Unfiltered Gastric Extracts.—In but six instances (40 per cent.) were organisms of the Boas-Oppler group definitely identified. In eight cases (53 per cent.) yeasts and sarcinae were present. Microscopic food bits were recognized in nearly 90 per cent. of instances.

THE LAPAROTOMY FINDINGS

Two cases had been explored before coming to us. Both the patients had been operated on within the year. At both abdominal sections the surgeon had made a clinical diagnosis of "benign" gastric ulcer of the chronic type, yet both of these patients were dead from inoperable, general cancer before a year had elapsed! The resection of the ulcer or the microscopic examination of a bit of extirpated tissue at the time of the initial laparotomy doubtless would have made known earlier the prognosis and have prevented further surgery. It might have saved life.

Location of the Malignant Process.—Abdominal section revealed five instances in which the pylorus was involved; nine cases in which the lesser curvature and some part of the surface of the viscus were affected; one instance of infiltration at the cardia, and one case of general carcinosis.

Lymph-nodes had been invaded in fourteen out of the sixteen cases in this series. Nine times secondary growths were demonstrated in the liver, pancreas, omenta or pelvic organs.

Character of Neoplasms.—In eight instances, extensive ulcera carcinomatosa were present. They were of the medullary type. In the remaining cases, adenocarcinomatosa of the common type were demonstrated.

OPERATIVE PROCEDURES AND OUTCOME

In four instances exploration only was possible. In five cases some form of resection was performed with or without gastrojejunostomy. In the remaining seven patients "drainage operations" to fit the case at hand were devised.

Nine patients died within one and one-quarter years following operation. To the other patients of this series was granted a lease of life of from two to more than five years.

122 South Michigan Boulevard.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. JOSLIN AND SMITHIES

DR. J. N. HALL, Denver: There are certain chances of error in the diagnosis of gastric ulcer that do not come to one's attention unless the cases come to operation. In case hemorrhage occurs it draws attention to the possibility of ulcer and makes the diagnosis easier. I recently had a case showing pain, hyperacidity and distress and I found that the patient had had trouble ten years before. I believed that this was undoubtedly a recurrence, and had expressed that opinion to the surgeon. At exploratory operation we found the marks of an old ulcer 4 or 5 inches from the pylorus, a condition which it would have been impossible to diagnose without operation. The acute symptoms were caused by a chronic intermittent pinching of the pylorus in a Treitz's hernia which caused the blood to leak through into the stomach. In another case there had been a long-continued history of gastric symptoms in a patient who came from the country and who was a hard drinker; when I saw him he was nearly moribund from a violent hemorrhage believed to be from ulcer. I found it due to a thrombosis of the superior mesenteric artery, associated with cirrhosis of the liver which had followed alcoholism. In another case there was a chronic pinching of the superior mesenteric vessels under the root of the mesentery. For a long time there was slow bleeding, leading us to believe he had an ulcer, but none was found. I have seen two or three cases from three to six months after appendicitis with symptoms of ulcer caused by dragging down of the pylorus by the omentum. Some of these cases have obscure and continuous pain and it is difficult to figure them out. Time and again, I have found a

minute hernia, not larger than a grain of wheat, and these slight hernias often give the symptoms of pyloric ulcer. This is probably caused by chronic reflex irritation of the stomach which continues until symptoms of ulcer appear. Again we see patients with the severe pain associated with ulcer, and with jaundice. Two or three operations have been performed with the idea that we were dealing with gallstones, because of the pain and jaundice, and the surgeon was chagrined when the real condition was found to be duodenal ulcer. In such cases the large duodenal ulcer had spread and compressed the common bile duct.

Dr. F. B. Lund, Boston: Dr. Joslin's paper gives a good idea of the ultimate results in surgery of the stomach. I do not think, however, that he ought to speak of a surgical mortality of 20 per cent. in gastric ulcer without making it plain that that is not the operative mortality. The operative mortality in my own cases is 5 per cent. The function of the surgeon in gastric ulcer is to interfere in cases which have resisted medical treatment and alter the conditions so that the ulcer may heal. This good end is accomplished in from 60 to 80 per cent. of the cases that are operated on. I understand that Dr. Joslin reported a case of duodenal ulcer in which the patient died in the sanatorium six months after the operation, as a surgical death. To my mind, this was not a surgical death, but a surgical failure; surgical interference failed to cure the ulcer and the patient died in six months, not because of, but in spite of it. Only those who die while still in hospital should be called surgical deaths. This, of course, would make the surgical statistics look very much better.

Dr. Frank Billings, Chicago: I think Dr. Joslin's statistical paper is only of relative value. Dr. Joslin acknowledges that the diagnosis of ulcer was not made in some of the earliest cases seen and that some of the patients were seen only in consultation. Therefore, there may be a question of diagnosis in some of the series. Thirty surgeons operated on thirty patients. How many physicians managed the medical treatment? What operations were performed? What was the medical management? If medical treatment failed, why? Of what did the patients surgically treated die? My experience is that ulcer of the stomach is usually mismanaged medically by the average practitioner. Statistics, to mean anything of value, must be more explicit in details of both medical and surgical treatment.

Dr. J. A. Lichty, Pittsburgh: It seems from Dr. Joslin's paper that neither the medical nor surgical treatment of ulcer is altogether ideal. From his paper we learned that 43 per cent. of the 213 cases were supposed to be cured. This is, of course, a low percentage of cures in a condition which is, after all, not so frequently fatal. This may be explained by the facts submitted. It seems the patients were not seen by the internist until the ulcer had run a course, on an average, of five and one-half years, or by the surgeon until the ulcer had run a course, on an average, of ten years. It is to this part of Dr. Joslin's paper I wish to direct attention—the necessity for early recognition of gastric and duodenal ulcer. The low percentage of cures is due more likely to the length of time which expires before any proper treatment is undertaken. The irreparable damage occurs before the internist sees the patient and not during the interval between the internist and the surgeon. In other words the patient likely lost his chance for cure before either internist or surgeon saw him. This is a difficult problem to meet. It is not always the fault of the physician. The patient will carry soda-mint tablets and alkaline powders for years before consulting a man who is capable of diagnosing gastric or duodenal ulcer, and it is not the fault of the laity alone; even physicians themselves in their own cases pursue the same course. In our teaching in medical schools, the symptoms of so-called "dyspepsia" should not be considered lightly, but should be looked on always as the evidence of some pathologic condition until the contrary is proved. If all the means at our disposal are employed it is not so difficult to make a diagnosis in early cases of acute or open ulcer. It is only after ulcers have been present for some time that they become so difficult to diagnose. We have now many tests, as for occult blood in the stools, the string test, roentgenoscopy, gastroscopy and others. If all the tests are employed and the patient's history carefully studied the diagnosis can be made easily in the early cases of open ulcer. I am sure this 48 per cent. of cures can be brought up also by teaching the laity to apply early for treatment in cases of gastric disturbance. If patients are seen during the first month or during the first two or three, or even five months, and proper medical treatment is instituted, I am sure more than 48 per cent. will get well.

Dr. Alexander Lambert, New York: Did Dr. Joslin try to calculate the end-results with the two surgeons who had 34 cases and the thirty surgeons who operated in the 30 cases? What was the difference in results between those who were in the habit of performing these operations and those who performed them relatively infrequently? It is known that the gastro-enterostomy opening into the stomach is apt to close if the pyloric opening remains patent. It is only when the pylorus is definitely stenosed that the gastro-enterostomy remains open. If 45 per cent. of the patients operated on, and about 50 per cent. of all patients treated medically remained unimproved, it must show that neither medically nor surgically have we worked out a successful treatment for these chronic ulcers of the stomach. Of course there is no question that in those old chronic ulcers in which there is scar tissue and a stenosis or deformation around the pylorus and a definite mechanical obstruction at this point, surgical procedure is the only method by which relief may be obtained. In other chronic ulcers, however, without the deformation of the stomach, so many different kinds of medical treatment have been tried that it is impossible to say, by any given set of statistics, whether or not really purposeful medical treatment had been accurately carried out. Until we are able to answer the questions of etiology of duodenal and gastric ulcer and base our treatment on this knowledge, it does not seem to me that we will be able to obtain much better results than those that are reported by Dr. Joslin, for if medical treatment gives but 39 per cent. of so-called cures and surgery gives but 45 per cent., there is such little difference between these results that it cannot be said that either one or the other offers much advantage, and neither medicine nor surgery has, as yet, worked out a proper method of treating these ulcers of the stomach and duodenum.

Dr. F. A. Speik, Los Angeles: What Dr. Billings and Dr. Lambert said is true. Patients do not pay enough attention to the early symptoms of ulcer, but it is also true that the physician whom they consult early does not work hard enough to determine whether the diagnosis should be of gastric and duodenal ulcer. Diagnoses are made of indigestion or dyspepsia and the patient is put off with palliative treatment. Many of Dr. Joslin's cases came to him eight or nine years after the onset. They surely consulted some physician before they did him, but the correct diagnosis was not made. Dr. Joslin's medical failures are not due to incorrect medical treatment, but they are due to the lack of early recognition, and therefore due to the lack of proper treatment. Many of his cases presented surgical complications when they came to him. Surely he cannot call all surgical cases medical failures, because not only are the ulcers not recognized and not treated, but also many are latent until some such surgical complication as mechanical obstruction, perforation, perigastric adhesion, etc., takes the patient to the physician. These must be recognized as surgical cases and not treated medically. There are definite indications for medical treatment and relative and absolute indications for surgical treatment. The surgical cases are those that may be relieved mechanically, such as perforation, which demands immediate diagnosis and operation, pyloric obstruction with actual cicatricial narrowing, with obstruction of high grade (but pyloric closures due to inflammatory swelling and spasm are medical cases), perigastric adhesions, hour-glass stomach, etc. Hemorrhage in 97 per cent. of the cases calls for medical treatment. In a medical case a gastro-enterostomy does not necessarily heal the ulcer. If the

pylorus is patent the gastric juice will continue through it and take off the granulation tissue and the ulcer does not heal. In Dr. Sippy's clinic, motor meals on the gastro-enterostomized stomach show that the stomach does not empty itself faster than normal. Our failures in gastric and duodenal ulcer are due to the lack of early diagnosis and the lack of an energetic medical treatment. The medical man should work harder to make the early diagnosis of ulcer and should also pay more attention to detail in his treatment; then there will be fewer medical failures.

DR. ALLAN A. JONES, Buffalo: There should be no unpleasant contention between the medical and the surgical men with respect to the care and treatment of gastric and duodenal ulcer. I often wish that medical men could operate, not that they would operate so often as surgeons do, but that they might apply this form of mechanical therapeutics. What is surgery but mechanical therapeutics? It is not a question of medicine or of surgery but of the accurate diagnosis in a given case at a given time and in a given condition. If the patient does not make satisfactory progress under medical treatment then one should resort to surgical treatment. Statistics are apt to be misleading and are sometimes useless, but if Dr. Joslin's paper shows anything it is that our best results follow medical treatment, but that at the proper time and under proper conditions surgery must be chosen. So far as the results of medical treatment in gastric and duodenal ulcer are concerned, the real and only valuable statistics we could compile would be compiled by personal supervision of every patient in the hospital kept under the immediate care of special nurses, as the control of the diet is most important. It is difficult to control the patient's diet when he is out of the hospital. Von Leube, some years ago, reported 556 cases in which the treatment consisted of absolute rest in bed, a milk diet, the application of poultices over the epigastrium and the administration of little or no medicine, and in these there were 95 per cent. of cures. I do not know the end-results in this series of cases, nor do I know how many recurrences there were, but there was probably a large number. The study of the end-results in a series of cases, as made by Dr. Joslin, is timely and important.

DR. J. R. VERBRYCKE, Washington, D. C.: I call attention particularly to the thread test, the benzidin reaction for occult blood and the roentgenogram. With a few exceptions I hold the clinical history subservient to these tests. A thread smeared with blood does not always positively indicate an ulcer, but small localized spots always in the same place on several threads has in my experience been almost infallible. I rarely make a positive diagnosis of ulcer without a positive benzidin reaction. When we learn the value of these tests as well as their limitations, we will make much earlier diagnoses and so secure better end-results. I am still finding more gastric than duodenal ulcers. The number of duodenal cases has markedly increased, but through our increasing facilities for diagnosis the gastric ulcers have kept pace. By the thread and the roentgenogram—the only reliable means of localization—I am finding many to be on the lesser curvature and have encountered about thirty in that location in the past two years. The localization of ulcer is important both for prognosis and for the treatment. A duodenal ulcer operated on with gastro-enterostomy and closure of the pylorus usually gives spectacular results, while, on the other hand, ulcer of the lesser curvature may not only be cured by operation but the symptoms may be aggravated unless the ulcer is excised. Our criterion for cure should be just as strict as our endeavor is earnest to make a diagnosis in the first place. It is not sufficient that the patient does not have symptoms. I always have the patient report, after his treatment, once a month for a year bringing a specimen of stool to be examined for occult blood. Occult blood often appears months before a return of subjective symptoms. If the patient has no return of symptoms or occult blood for twelve months, we can call him cured.

DR. ANTHONY BASSLER, New York: Until more is learned of the etiology and pathology of ulcers, statistics on results of treatment will be useless. To say so many ulcers have been treated either medically or surgically and to give results without discussing the etiology and the varied pathology of ulcers is holding the subject back. I think that Dr. Joslin's statistics present too few cures by both the medical and surgical methods of treatment. I agree with Dr. Billings and Dr. Lambert; the subject cannot be presented *in toto* from the medical or the surgical side alone. The unfortunate status of affairs in this condition makes one case of ulcer in which the etiology and pathology have been worked out of more worth than statistics on a thousand treated in which neither one of these is mentioned. It is probable that so far as results from treatments are concerned, division can be made between soft and hard forms, for in my experience it depends on the absence or presence and extent of fibrous tissue and the character of cell infiltration whether medical or surgical measures are successful. Our knowledge of etiology, the old divisions of pathology, the overusing the length of clinical course for differentiation between acute and chronic forms, and even the revealments of the operating-room are still far short of what we must learn properly to understand gastroduodenal ulcer.

DR. GEORGE DOUGLAS HEAD, Minneapolis: How long a time have these operated patients been under observation subsequent to operation? We all know that the history of gastric and duodenal ulcers is one of remissions and exacerbations. A tremendous amount of statistical material has been brought to our attention from the surgical clinics during the last few years purporting to give the operative end-results of gastric and duodenal ulcer after one, two or three-year periods. In discussing the cure of gastric and duodenal ulcer, we as medical men are thinking in the terms of five, ten or even more years and our statistics are based on these figures, while the surgeons are giving their results in terms of one, two, or at most five-year periods. No surgical statistics exist showing the results of operative treatment over a ten-year period. In order intelligently to compare the end-results of the surgical and medical treatment of gastric and duodenal ulcer the same standard of time interval must be adopted by both surgeons and internists. Over how long a period of time were Dr. Joslin's series observed subsequent to operation? We must not deceive ourselves in the analysis of statistical material offered in proof of one method or the other for the cure of gastric and duodenal ulcer. We must approach the whole subject in a broad but scientifically critical spirit.

DR. J. D. DUNHAM, Columbus, Ohio: The occurrence of gastric cancer in patients under 30 years of age is quite infrequent. I have seen three, in two women and one man, aged 18, 24 and 30 years, respectively. In every instance there was increased hydrochloric acid and the total acidity was increased. All were of the fulminating type. All three cases were proved by operation and histologic examination of the specimens to be true cancer.

DR. M. H. FUSSELL, Philadelphia: I have not heard a word spoken of indigestion; it has probably been purposely left out. Yet I would venture to say that practically every patient whom Dr. Joslin has seen was treated for indigestion long before it was thought that the condition was gastric or duodenal ulcer to be treated either medically or surgically. Many cases will continue to be treated for flatulence, epigastric pain and disturbance and for indigestion until they are far beyond hope from medical treatment and in many cases from surgical treatment. It is a fact that numerous conditions bring about symptoms which are called indigestion. The functional cases of indigestion are not due to any surgical condition whatever. In such conditions as gastric ulcer, infectious gall-bladder disease, chronic appendicitis, carcinoma, and others, the true condition is often not recognized until the patient is far beyond the help of either medical or surgical treatment. When one sees a patient with what is commonly called indigestion, that patient should be gone over carefully from head to foot to find out just what is the

matter. Then treatment should be according to the indications. I think we are entirely unjustified in treating these case with alkalies and other internal remedies for months and years until they become difficult to diagnose. It is not the early cases as described in the text-books that are hard to diagnose but the border-line cases. When a patient has been given all the advantages of medical treatment and does not improve it becomes our duty, after a reasonable period, to have an exploratory operation to find out what is the matter, for an exploratory operation is less dangerous than long-continued medical treatment that is giving unsatisfactory results.

DR. J. M. RECTOR, Columbus, Ohio: I agree with Drs. Joslin and Smithies in emphasizing the importance of early diagnosis in these conditions of the stomach. I would also call attention to Dr. Vaughn's theory of infection as it relates to the causes of gastric ulcer, and to recommend the trial of certain therapeutic measures before a gastro-enterostomy is determined on. In Dr. Vaughn's theory it is shown that a ferment caused by bacteria infesting the mucosa attacks the mucosa destructively, whereon the body cells, if the cell resistance of the host be sufficient, begin themselves to produce ferments to overcome and destroy bacterial ferments. Thus the resistance of the patient becomes a factor, and the drainage and motor function of the stomach important considerations. In case of interference with drainage, I wish to urge a serious attempt to restore the elasticity and tone of the gastric muscles by pneumatic gymnastic methods before such a measure is resorted to. As Cannon points out, "The essential fallacy in the idea of gravity drainage from the stomach results from a failure to regard the pressure relations in the abdominal cavity. The weight of the alimentary canal, as such, is approximately that of water. The food swallowed or undergoing gastric digestion has approximately the weight of water. The pressure in any part of the inactive alimentary canal, as Weisker proved, is due to the weight of the overlying abdominal organs. If the canal is inactive, therefore, the food is as if surrounded by water. Water resting in water is, of course, in exact equilibrium, and even when the body is in the upright position, and a large artificial opening connects the stomach and the intestine, water will not run out; 'because of the hydrostatic relations in the abdomen, gravity can have no effect.' 'Drainage' in the common usage of that term is therefore impossible. That the food may move onward through the alimentary canal, muscular contraction is necessary to create a difference of pressure." If gastro-enterostomy is done when gastric tone is deficient, it will fail because there can be no drainage without muscular contraction. This is the explanation of "vicious circle," and the reason for the undoing of many gastro-enterostomies.

DR. ELLIOTT P. JOSLIN, Boston: I agree with Dr. Lund that if the surgeon gets his cases of gastric and duodenal ulcer in a favorable condition he may obtain from 90 to 95 per cent. of recoveries. Dr. Lichty hit the point when he said that cases of ulcer would do better if treated early. In my series of 213 successive cases, there was an average history of six years of discomfort before seeking treatment. I hope no one else will report a series of cases coming to treatment after having suffered so long. I purposely did not attempt to draw comparisons between the thirty patients operated on by thirty surgeons and the thirty-seven operated on by two surgeons, because the number was too small. Probably four-fifths of the surgical cases were treated during the last three or four years; consequently the surgical end-results showing 47 per cent. of cures cover a far shorter period of time than do the medical end-results. The statistics, therefore, are favorable to the surgeon. Dr. Billings criticizes the value of these statistics because the cases have been treated by many medical men and necessarily (?) show very poor results. In the last series of cases which I reported some sixteen years ago, with Dr. Greenough, the criticism was likewise made that the results were unusually poor. In that series 114 cases were reported and it was stated that 80 per cent. were discharged from the hospital cured. At that time the Massachusetts General Hospital was under the dominating influence of two of the best men in medicine in America—F. C. Shattuck and R. H. Fitz—and there is no doubt but that these men carefully treated the patients with ulcer of the stomach. Yet when we came to analyze the 80 per cent. of cures and ferreted the patients out after five years, we found that only 40 per cent. were well or even relieved, quite as in this recent series. There is little doubt that if Dr. Billings studies the records of the Chicago hospitals, he will find 80 per cent. of the patients with ulcer of the stomach or duodenal ulcer have been discharged as cured, but if he should be able to follow 91 per cent. of the series after five years have elapsed, he would probably discover that the percentage of cures had dropped far below that figure. Is it not proper to ask Dr. Billings to present a similar series of 234 or more cases of gastric and duodenal ulcer and to trace out the end-results of 91 per cent. of them after a period of five years? Should this be done, I think he would allow that our statistics are correct. In the paper we did not attempt to discuss the medical treatment of ulcers, but rather to show what happened to patients who had had the disease, in the hope that we all might treat our patients better.

DR. FRANK SMITHIES, Chicago: The whole subject of gastric ulcer is in a state of transition. Confusion arises from medical men trying to interpret surgical statistics, and vice versa. The life history of chronic peptic ulcer is one of periodicity of symptoms and signs. It is a disease prone to recover and recur, seemingly quite irrespective of what type of medical treatment we use. Many cases called "medical gastric ulcers" have been shown by laparotomy not to be ulcers at all. This is especially true in persons under 30 years of age. In these patients, practically the same clinical picture is presented when the lesion is in the appendix or gall-bladder. In this event pyloric spasm, and vagotonic hyperacidity are responsible for the discomfort. Unfortunately, the statistics of peptic ulcer have been confused by this false ulcer group. "Medical ulcers," so-called, do, however, occur. They are apparently, in their life history, quite a different pathologic process from the chronic ulcer. Hence, this type of ulcer cannot in any way be compared, statistically, with the "surgical" ulcer. A medical ulcer is something that can rarely be seen or felt and manifests itself only by its symptoms, whereas, a "surgical" peptic ulcer can be seen and felt, examined pathologically, and definitely described and recorded. It would seem that Dr. Joslin is quite justified in giving the statistics that he has presented. It shows us our limitations in the subject. He has gone quite as far as possible in the comparison of things, which, from their different clinical and pathological nature, it is impossible to compare. Concerning the value of the occult blood-tests and the "string test," both these maneuvers may lead us to make grave mistakes, unless carefully checked. I have used three hundred strings. In 167 instances, peptic ulcer was proven operatively. In but seven instances were the findings suggestive of a "positive" string-test. When it is recalled that ulcers only bleed intermittently, it will be seen what a factor of chance there is in relying on this test for useful, clinical information. Tests for blood in the feces by means of guaiac or benzidin must be very carefully interpreted. Patients on a meat-free diet may give typical reactions if they are eating chlorophylaceous vegetables, or food rich in iron compounds.

Black Versus White Operating Sheets.—Black and white operating sheets are compared in the 1913-1914 "Report of the Medical and Sociological Departments of the Colorado Fuel and Iron Company" as follows: "The advantages of a dark sheet are: It absorbs light, rests the eye, and the predominating reflection is from the wound. The disadvantages of the white sheet are: It reflects strongly, tires the eye and produces feeble contrast. It is contrast that is desired. The dark sheet is to the surgeon what the dark room is to the ophthalmologist."

LANDRY'S PARALYSIS

REPORT OF A CASE, WITH NECROPSY *

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Many cases have been reported since Landry first described a disease characterized by a rapidly ascending paralysis passing from the lower to the upper extremities, thence to the cranial nerves, causing various paralyses, and ending fatally in the course of six or seven days with involvement of the vagus and respiratory failure. The pathologic changes in the early cases were negative. This may have been due to the insufficient methods of examination in part, but even in later reports very few changes have been found at times, as in the case fully reported by Pfeiffer,[1] in which changes in the peripheral nerves only were found to be present.

In the literature of this subject, which is considerable since Landry in 1859 described his case, we find various lesions recorded in which either polyneuritis or spinal cord or bulbar inflammatory involvement has been present, or all in combination. Leyden and Goldscheider hold that it may assume any or all of these forms. The cord changes are usually hyperemia, perivascular infiltration and hemorrhage; at times interstitial neuritis. All authors agree that it is of infectious origin and attempts have been made to isolate a specific organism.

The case I shall record may be of interest, as it was observed from the onset, and a careful post-mortem examination has been made.

History.—W. E., boy, aged 15 years; previous history negative. Sept. 27, 1913, he complained of pain and weakness in the lower extremities, which increased in severity until October 11, when he was admitted to St. Vincent's Hospital, in New York, in the service of Dr. Constantine J. MacGuire. Examination of the heart and lungs and abdominal organs was negative. There was paralysis of the lower extremities, with loss of reflexes and tenderness over the larger nerve trunks. No anesthesia.

Laboratory Findings.—The urine was negative. The spinal fluid was clear; Fehling's reduction test was positive; the globulin was slightly increased; cells were 7 per c.mm. Smears and cultures for bacteria were negative. The Wassermann was negative; throat cultures negative. An examination of the blood showed 23,500 white cells, with 86 per cent. of polymorphonuclears, 2 per cent. of transitionals and 12 per cent. of lymphocytes. October 17 there was paralysis of the external rectus of the left eye. The eye grounds were negative.

Course.—The weakness gradually extended to the upper extremities, with loss of power, which in the course of a week became complete in the hands and arms. October 29 there was difficulty in swallowing and complete paralysis of the muscles of the right eye and of the superior oblique of the left eye (Dr. Kelly). November 7 there was dyspnea and difficulty in swallowing. All of these symptoms gradually increased in severity, and death occurred November 21 from respiratory failure.

Necropsy.—The necropsy, macroscopically, showed intense congestion of the cord; no other lesion. Microscopically, there was an interstitial neuritis of the sciatic nerve and congestion of the anterior horns, without perivascular infiltration or meningeal involvement. The medulla showed involvement of the cranial nerve nuclei and degeneration of the axis cylinders for a short distance from the cell body. The whole picture differentiated it from poliomyelitis. The brain, at the time of this report, had not been examined. The microscopic study of the case was made by Dr. John H. Larkin.

CONCLUSIONS

We have here, therefore, a case of ascending paralysis, with attending neuritis, which followed the usual course of extension, later involving the upper extremities and the bulbar nerves, resulting in respiratory failure. The pathologic findings are definite, involving both the peripheral and central nervous systems. The course of the disease was longer than that usually described, extending over six weeks, but otherwise the case was typical in its clinical manifestations.

46 East Fifty-Second Street.

* Read before the Section on Nervous and Mental Diseases at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

1. Pfeiffer: Brain, 1913, xxxv, part 4.

ABSTRACT OF DISCUSSION

DR. WALTER B. SWIFT, Boston: The great question in this field of investigation, as everybody knows, is whether or not Landry's paralysis and anterior poliomyelitis are identical disease-entities. It seems strange that, as the years go by and these cases of Landry's paralysis appear, no one takes the crucial step that is to result in determining this point. The research that would do it is this: Emulsify the cord from a Landry's paralysis patient and inject it into a monkey. If the animal has anterior poliomyelitis in consequence, the identity would be indicated.

DR. EDWARD D. FISHER, New York: That would, of course, be a very essential point if we could get it done. It depends more or less on the pathologic findings. As stated, the report of the case from the pathologic findings would seem to put it outside of the possibility of being poliomyelitis. No micro-organisms were found. The final test would be as mentioned by Dr. Swift.

MORBIDITY REPORTS AND STATISTICS *

A DISCUSSION OF THE PROVISIONS OF THE MODEL STATE LAW FOR THE REPORT OF CONTROLLABLE DISEASES

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EVOLUTION OF HEALTH DEPARTMENTS

While in this country city boards of health in some instances date back more than a century, and state boards of health have been in existence, some for as long as fifty or sixty years, there has been during the last ten or twenty years a marked growth in their activitives. Health departments are going through a process of evolution, in which they are seeking to adjust themselves to modern thought and recently acquired knowledge. They are in one of the crucial formative periods.

Realizing that they are destined to occupy a broad field, health departments have taken on themselves or had given to them one activity after another, some intimately related to the public health, others in which this relation is more remote. In this taking on of new activities, there has appeared to be a tendency in many instances to forget or ignore the central idea for which they have been founded and about which they must evolve, the control and prevention of disease. There has been a tendency for health departments to take unto themselves the control of all things relating

* Read before the Section on Preventive Medicine and Public Health at the Sixty-Fifth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1914.

directly or indirectly to the public health and many things relating more especially to social betterment. This course offers special difficulties, as well-nigh all things the community does, practically all its activities, are related more or less closely to its health. There is hardly a department of city or state government which in its activities is not associated at least remotely with the general health.

CENTRAL IDEA OF HEALTH DEPARTMENTS

The work which must remain the central idea of the health department is the control of disease.

The control of disease depends on knowledge of its prevalence and the conditions under which it occurs. It has repeatedly been possible to eradicate yellow fever by acquiring exact information of the occurrence of each case. It will be just as necessary to secure similar information of the ocurrence of cases, to eradicate or to control effectively any of the equally dangerous, but more common, preventable diseases. It will probably be found as easy to eradicate typhoid fever or tuberculosis from a community as it is to eradicate yellow fever. In the future, public opinion will probably make it the duty of health departments to eradicate these diseases or at least to maintain an effective control over them. When this time comes health departments will need to be larger than at present and have increased appropriations. There is hardly a state or city health department in the continental United States, the total appropriations of which might not be economically and advantageously expended in the control of any single one of the commoner communicable diseases, such as scarlet fever, typhoid fever, or tuberculosis. One of the first requirements of the future health department will be exact information of the occurrence of each and every recognized case of the diseases it is attempting to prevent.

The need of having this information of the prevalence and geographic distribution of diseases has been realized by physicians in the United States for many years, and the subject has repeatedly come before the American Medical Association in one form or another. At the meeting in 1855 the following resolution offered by Dr. J. W. Thomson was adopted:

> WHEREAS, few subjects of greater interest and importance could be presented to the consideration of the American Medical Association, now representing most of the States and Territories of the Union, than the attainment of a correct medical topography of each, with a history of its prevailing diseases, and most successful treatment of the same; therefore be it
>
> *Resolved*, That with this view and conviction, this Association appoint a special committee for each State and Territory represented, . . . whose duty it shall be to report on its medical topography, epidemic diseases, and the most successful treatment thereof, and that the same shall continue to hold their office for three years. . . .

At this meeting Dr. J. G. Orton introduced a resolution supplementing the preceding. The resolution, which appears not to have been adopted, was in part as follows:

> *Resolved*, That each county medical society, or (in parts of the country where such has not been established), any duly organized medical association, be requested to amend its constitution by attaching therunto the following article:
>
> "It shall be the duty of each member of this society to keep a faithful record of the diseases which may fall under his observation during each month, according to the classification adopted by this convention in May, 1847, stating the age and sex, occupation and nativity of the patient, the average duration of the disease, and finally, their recovery or death, and to report the same in writing to the secretary, on or before the first day of February of each year, who shall transmit a digest thereof to the State Medical Society and also to the appropriate committee appointed by the American Medical Association for its reception."
>
> *Resolved*, That each incorporated hospital, infirmary and asylum be invited to furnish a copy of their annual reports for the use of the committee of their respective states.
>
> *Resolved*, That the state committees appointed by this Association to report on the prevailing diseases of their respective localities, shall receive and arrange a digest of the reports transmitted to them by the secretaries of the various county societies, and report the same at the annual meeting of this association.

In 1883 Michigan passed a law requiring householders, hotel keepers, keepers of boarding-houses, or tenants, to report immediately to the health officer or board of health all cases of "small-pox, cholera, diphtheria, scarlet fever, or any other disease dangerous to the public health."

The notice was to state the name of the patient, the name of the disease, and the name of the householder or hotel keeper giving the information; also the address where the patient was to be found. Physicians were similarly required to report cases and when the physician reported a case the householder or hotel keeper was not required to do so.

The Michigan law seems to be the first one looking toward the comprehensive collection of information with regard to the prevalence of disease, and for a number of years the work was carried on with intelligence and perseverance under the able supervision of Dr. Henry B. Baker, then secretary of the state board of health.

IMPORTANCE OF MORBIDITY REPORTS

The question of morbidity reports is one of the most difficult problems to be solved by the state authorities. A number of states have been endeavoring earnestly to solve the problem within their respective jurisdictions. Considerable progress has been made in several instances. In 1912 the State of Virginia had 31 cases of diphtheria reported for each death registered, the District of Columbia had 26 cases for each death, Rochester, N. Y., had 31, and Salt Lake City had 53. In the same year Virginia had over 16 cases of typhoid fever reported for each death, Hartford, Conn., had 19 cases, Denver, 16 cases, and Worcester, Mass., 14 cases. With morbidity reports of this degree of completeness the respective health departments have definite information of the prevalence of these diseases and the conditions under which cases are occurring. They possess information which makes them masters of the situation at all times.

The administration of health matters comes within the jurisdiction of the several state authorities. It belongs to the police powers retained by the states, and not delegated to the Federal Government. This makes in the continental United States forty-eight sanitary authorities, and makes it possible to have forty-eight different laws, each with different requirements, for every phase of public-health administration. While this is possible it is by no means necessary nor is it for the common good. The identity of needs and purposes should and will cause a mutual exchange of ideas and a general selection of the best for common adoption. Thus, the states will develop a closer union in sanitary administration.

For this purpose some form of public-health congress or council with representatives from the several

states is necessary. With this idea in mind the Congress of the United States in 1902 provided for conferences of the state and territorial health authorities with the Federal Public-Health Service. These conferences have been held annually and at the one held in Minneapolis in June, 1913, there was adopted a standard model law for morbidity reports. The law was drafted in tentative form by a committee appointed two years before and was the subject of full discussion and amendment by the conference.

A discussion of the provisions of this law cannot be other than of interest to all in any way connected with public-health administration.

MODEL HEALTH LAW REQUIREMENTS

Section 1 of the law makes it the duty of the state department of health to keep currently informed of the occurrence, geographic distribution and prevalence of the preventable disease throughout the state, and for this purpose establishes in the state department of health a bureau of sanitary reports.

The purpose of this section will be apparent to all familiar with the control of disease. The only rational reason for the existence of a state department of health is that it may control the controllable diseases throughout the state either directly or through the local health authorities. In either instance disease cannot be controlled in the absence of dependable current information of the occurrence and geographic distribution of the cases.

No one would think of attempting to control cholera, plague, or yellow fever without providing for some means of getting early information of each case. This is one of the things to be considered and for which provision must be made in every sanitary campaign against these diseases, but it is just as true in the control of any other disease. Whenever a health department sincerely attempts to lessen the prevalence of tuberculosis in its jurisdiction it will need to know of, and will require the notification of all cases of the disease. Whatever control the health department can exercise over such diseases as diphtheria, scarlet fever, measles, epidemic cerebrospinal meningitis, can be exercised only through a knowledge of the occurrence of cases. Communities in a measure control the incidence of typhoid fever by the installation of pure water supplies and in some cases by requiring the pasteurization of milk, but these things are but factors. Pure water and pasteurized milk will but lessen the incidence of typhoid fever, and a knowledge of the occurrence of cases is still necessary not only to control the other factors which spread the disease, but to know when the measures taken are inefficient or need adjustment. Given a city with an absolutely pure water-supply and with the lowest of typhoid-rates, it would still be necessary that any cases that did occur should be immediately reported because each case would show a break in the community's sanitary wall which needed attention.

Vaccination and re-vaccination will protect a community against small pox. Nevertheless, that community would be foolhardy and unmindful of its welfare which did not require the notification of cases of this disease, for occasional cases may occur even in the best vaccinated communities. What is true of this disease is true of every other. Control is impossible without a knowledge of when and where, and under what conditions cases are occurring.

Section 2 of the law names the diseases of which cases shall be notified. The list is divided into four groups: (1) infectious diseases, (2) occupational diseases and injuries, (3) venereal diseases, and (4) diseases of unknown origin. The first three groups include most of the diseases which occur in this country and which, with our present knowledge, may be controlled. They consist of the diseases for the control of which presumably health departments have been established.

Group 1 includes the infectious diseases, among which will be found those which have been reportable in many states for some time.

Group 2 includes occupational diseases and injuries. Occupational diseases constitute a class which in this country have but recently received anything like the amount of attention they deserve. Practically all occupational diseases are preventable and are subject to control. During the last fifty years there has come about a marked change in industrial conditions, not only in the United States, but in other countries as well. There have grown up immense manufacturing plants, large shops employing thousands of hands. There have been developed new and complex labor-saving machines, new processes have been evolved, new fabrics and materials are now being used and with this evolution of industrial methods and conditions there have arisen new occupational diseases and an increasing incidence of older ones. In an industrial community approximately one-third of the population is engaged in shops and factories, or similar places of labor, so that industrial hygiene and the prevention of occupational diseases has grown apace with our industrial development until industrial hygiene now constitutes an important factor in national and community hygiene.

Since 1911 fourteen states have enacted laws requiring the report of certain, or all occupational diseases. These laws for the most part have been impossible of enforcement, at least they have been in most instances unsatisfactory. Nevertheless, they show a recognition of the importance of knowing where cases of occupational diseases are developing. Every case of occupational disease shows the existence of conditions capable of producing disease, conditions which should be removed so that they will not produce the diseases in others. The first step in the control of occupational disease, as in the control of other diseases, is to secure a knowledge of where and under what conditions cases are occurring.

Group 3, the venereal diseases, constitute a group which offer great difficulties in their control. It will be a long time before it will be possible to have all cases of these diseases notified. They have been made notifiable in a number of states and properly so, for there are few diseases which cause more injury to the community than do these. Every case represents a focus of infection from which the disease may be and usually is spread to others, and it is only proper that each and every case be so controlled that it shall be impossible for the infection to be spread.

The fourth group of diseases includes pellagra and cancer, diseases of unknown origin, and the purpose of the notification of the existence of these is, not that the disease may be controlled, but because of the possibility that a knowledge of the relative prevalence and geographic distribution of these diseases and the conditions under which cases occur may be of assistance in the search for their origin.

Section 3 of the law requires physicians to report each and every case, or suspected case, of any of the notifiable diseases in his practice to the local health officer, this report to be made either by mail or by special messenger. The report, which is to be in writing, is to show the date; the name of the disease or suspected disease; the name, age, sex, color, occupation, address, and school attended or place of employment of the patient; number of adults or children in the household; the source or probable source of infection or the origin or probable origin of the disease, and the name and address of the reporting physician. If the disease is, or is suspected to be small-pox, the report in addition is to show whether the disease is of the mild or the virulent type, and whether the patient has ever been successfully vaccinated. If the patient has been successfully vaccinated, the number of times and the dates, or approximate dates of such vaccination are to be given. If the disease is, or is suspected to be, cholera, diphtheria, plague, scarlet fever, small-pox, or yellow fever, the physician is, in addition to the written report, to report the case immediately to the local health officer in the most expeditious manner available. If the disease is, or is suspected to be, typhoid fever, scarlet fever, diphtheria, or septic sore throat the report is also to show whether the patient has been, or whether any member of the household in which the patient resides, is engaged or employed in the handling of milk for sale or preliminary to sale.

The reason for the various data required in the report is readily apparent. The dating of the report is necessary. The giving of the name, age, sex, color, occupation and address are necessary for identification and for statistical purposes. The school attended or place of employment gives early information to the health department as to where the disease has been contracted and also where others have been exposed and contacts will be found. The number of adults and children in the household indicates the nature of the precautions that will need to be taken to prevent the spread of the disease, while the stating of the source or probable source of the infection or origin of the disease by the physician would often give useful information to the health department. The requirement for the notification of cases of disease should always provide for the report of suspected cases, and there should be connected with every health department an expert diagnostician of the controllable or notifiable diseases.

A health department that has not on its staff such a diagnostician is not in a position to control the notifiable diseases. Much as one might wish to believe that physicians never err in diagnosis, in practical health administration one is compelled to face the fact that many physicians see few of these diseases and their experience is therefore limited. The most, therefore, that a physician should be asked to record on a notification report is that the disease is, or is suspected to be of a certain kind. The health department should verify the diagnosis. The provision requiring that in cases, or suspected cases of cholera, diphtheria, plague, scarlet fever, small-pox, or yellow fever, the physician shall, in addition to the written report, give immediate notice to the health department in the most expeditious manner available, enables the use of the telephone or at times of the telegraph, or in the absence of these means a special messenger might be used. The need for the expeditious notification of these diseases does not require explanation.

The requirement that in cases or suspected cases of typhoid fever, scarlet fever, diphtheria, or septic sore throat the reports shall also show whether the patient has been, or any member of the household in which the patient resides is engaged in the handling of milk, is made because of the well-known fact that these diseases are frequently spread by milk, and the control of the disease and the protection of the community depends on the protection of milk-supplies from persons infected with these diseases.

The requirements of Section 4 with regard to the notification of cases is made to apply to patients in hospitals or other public or private institutions and to physicians attending these patients.

Section 5 of the model law provides that whenever a person is known to be, or is suspected to be affected with a notifiable disease and no physician is in attendance, then an immediate report of the case shall be made to the local health officer by the person in charge of the patient. Teachers, or other persons employed in public or private schools including Sunday schools are required by the law to report immediately to the local health officer each and every known or suspected case of a notifiable disease in persons attending or employed in their respective schools.

The blanks to be used in making the written reports are to be supplied by the state department of health through the local health officers and are to conform to a standard form adopted by the conference of state health authorities. These blanks are printed on a post-card. This is believed to be the most convenient form of report for the physician as it does not require an envelope and needs no addition of postage.

Section 8 requires local health officers within seven days after the receipt by them of reports of cases of the notifiable diseases to forward by mail to the state department of health the original written reports made by physicians, after having first transcribed the information given in the respective reports in a book or other form of record for the permanent files of the local health office. On each report thus forwarded the local health officer is to state whether the case to which the report pertains was visited or the case otherwise investigated by a representative of the local health office, and whether measures were taken to prevent the spread of the disease or the occurrence of additional cases. If the patient was not visited or otherwise investigated by a representative of the local health office it is evident that the diagnosis might have been incorrect, and if no measures were taken to prevent the spread of the disease or the occurrence of additional cases the question might well be asked, What was the use of the report?

Section 10 of the law provides that whenever there occurs within the jurisdiction of a local health officer an epidemic of a notifiable disease the local health officer shall, within thirty days after the epidemic shall have subsided, make a report to the state department of health of the number of cases occurring in the epidemic, the number of cases terminating fatally, the origin of the epidemic, and the means by which the disease was spread, except that, whenever the state department of health has found it necessary to take charge of the control and suppression of an epidemic, the local health officer having jurisdiction need not make this report. This provision will give a connected account of the outbreaks of controllable diseases occurring within a state. They will also show what measures were taken locally to control the outbreaks and whether the measures were efficient.

Section 11 provides that no person shall be appointed to the position of local health officer until after his qualifications have been approved by the state department of health. If the control of disease in local jurisdictions and the protection of the public health is to be in charge of local health officers it is absolutely essential that there be some means of having their competency and eligibility passed on. Also, if the state department of health is to be made responsible in any way for health conditions within the state, it must have some control over the local health authorities. If responsibility for the control of disease within a state is not placed on the state health department, one might well ask, what is the purpose of the state health department?

Section 12 of the law provides that where there are no local health officers, and in localities where although local health officers have been appointed, adequate provision has not, in the opinion of the state department of health, been made for the proper notification, investigation, and control of the notifiable diseases, the state health department shall appoint properly qualified sanitary officers to act as local health officers and to prevent the spread of disease in and from such localities.

Section 13 makes it a misdemeanor for a physician or other person wilfully to fail to comply with the provisions of the act. It seems perfectly proper to assume that no physician who works against the community's interest and places obstacles in the way of the control of disease and public health administration by intentional failure to report to the health department the cases of notifiable diseases among his patients should be allowed by a state to practice medicine.

Section 14 of the law provides that no license to practice medicine shall be issued to any person until after the applicant shall have filed with the state licensing board a statement signed and sworn to before a notary or other officer qualified to administer oaths, that he has familiarized himself with the requirements of the law. A copy of this sworn statement is to be placed on file with the state department of health. This is simply to guarantee that every licensed practitioner will be familiar with the law with regard to the notification of disease.

The provisions of the model law slightly amended have already been adopted by the State of Kansas through regulations promulgated Dec. 13, 1913. As opportunity affords other states will undoubtedly take similar action.

ABSTRACT OF DISCUSSION

DR. A. T. MCCORMACK, Bowling Green, Ky.: After listening to Dr. Trask's paper, it seems easy to understand why resolutions passed in 1842 and 1855 calling for morbidity statistics had so little effect, and I fear that future essayists will report the recommendation of such bills as this as quite as ineffectual as these resolutions passed fifty years ago. Such a health organization as Dr. Trask has described would be delightful, but I venture to say that when it becomes possible for any health organization to have enough inspectors to confirm every diagnosis of a preventable disease reported to it by the practicing physicians of the jurisdiction, the millennium will already have arrived. On what meat would Dr. Trask have us feed our sanitary inspectors to make them so much more competent than the average reputable physician? Inspectors are selected from the medical profession; they are educated and trained alike, and a commission and a salary add but little to the stature or qualifications of the average man. Morbidity statistics are of tremendous importance. For them to be of real value accurate diagnoses are essential, but, instead of having an inspector to confirm the work of each physician, would it not be better for us to demand that those physicians who are unable to make accurate diagnoses should be excluded from the practice of medicine? In fact, is this not the purpose of every medical registration law in the land? The time has come when we know something definite about preventable disease. In almost every jurisdiction we are getting actual results, and instead of further centralization of our health organization with its result in dry statistics and ultrascientific and impracticable atmosphere, it has seemed to me that the family physicians, scattered all over the country, compose the great bulk of the sanitary force that are to save this country from the thralldom of preventable diseases. I do not believe for one moment that such an army of inspectors as is contemplated by Dr. Trask is necessary or that it will ever be created in this country except as we develop such a practical conception of state medicine that it will transform the family physician into the community physician and thus enroll the whole medical profession as practitioners, first, for the prevention of all the diseases possible, and, secondly, for the treatment of the non-preventable diseases.. A health organization, to be successful, must have the confidence and support of the medical profession; and any statistics made by that profession, until the individuals composing it are competent to make a diagnosis, are of no real value.

DR. TOM WILLIAMS, Washington, D. C.: Dr. Trask spoke of occupational diseases, and that is a matter which must be taken into serious consideration in the immediate future of public-health matters; because workmen's compensation acts are coming into force all over the country. Let us herein be forewarned by the measures of Germany, France, in part, and England with regard to the dangers of the workmen's compensation acts. Of course, we all admit the need of workmen's compensation acts, and the importance of protecting the workingman against want on account of accidents in his occupation; but what has actually happened in the demonstration is this, that in Germany the present upkeep of the fund of indemnity for workmen's compensation exceeds that for the German army, per annum, which is colossal.

Of those cases, however, 75 per cent. belong to a category which is very little understood by most practitioners, and which in consequence very few men know how to manage, but which can be met quite simply. I refer to neurotic disturbances, neurasthenias, neuroticisms. Most of these cases are amenable to proper treatment, and all are preventable. Although some of the patients are actually simulators, who pretend disease for the sake of indemnity, many of them are genuinely disturbed "neurotically" by the idea that they are no longer fit for work, as a consequence of some accident. These cases can be well dealt with by modern methods of psychopathology; and it is just as well that public officials dealing with the administration and the passing of acts for workmen's compensation should be aware of this fact so as to be ready to anticipate and prevent what has occurred in Germany. We have had to take hold of the scandal of indemnification for railway accidents so that now we no longer expend public money and money of corporations in large amounts for pretended injuries.

DR. S. L. JEPSON, Wheeling, W. Va.: The fact is, whatever local laws or state laws we may have to-day on the subject of reporting disease, nearly all these laws fail of enforcement; and I do not see how they can be enforced. We have in our state law a provision, for instance, for the reporting of births, with a fee of 25 cents each attached. The counties refuse to pay the 25 cents; and, therefore, the doctors refuse to report the births. They fail to report cases of infectious disease promptly, except in the cities where there is a vigorous health department, or in case of small-pox. How to induce our physicians to make these early reports is the proposition of greatest importance. Perhaps Dr. Trask can give us a little further light on that subject.

DR. MARTIN FRIEDRICH, Cleveland: There is a provision in this model health code that, within seven days after notification of a communicable disease, the local health officer must

report it to the state board of health. There is also an item in which he has to state what he has done; for, as Dr. Trask added, "if nothing is done, what is the use to report diseases?" Very good; but if, after the disease or the epidemic is reported to the state board of health, the state board of health does nothing, what is the use to report to it? In towns and villages around Cleveland, where not infrequently little epidemics of scarlet fever, diphtheria, etc., occur, the local authorities frequently do little or nothing to confine the disease, and as the people come almost every day to Cleveland to sell their produce, for instance, milk, you can readily see there is danger for us. There ought to be an item in the code which would make it mandatory for the state board of health to act when the local authorities do not.

Dr. I. D. Rawlings, Chicago: Not one item is presented in this model bill that would not be feasible in Chicago. We are absolutely prepared to carry out all the provisions; and what is applicable in Chicago should be in many of the other cities of the states and even in the rural districts. We have found in Chicago that some of our physicians will not do their full duty unless compelled. We are now prosecuting some of these for failure to comply with our city ordinances requiring the reporting of contagious diseases. In diphtheria we insist on a positive diagnosis. If the physician does not take a diagnostic culture, we insist on the health officer doing so, and, if necessary, two diagnostic cultures are taken. We require placarding in Chicago for scarlet fever and measles cases; but we do not for German measles. Some of our physicians, as a subterfuge, would report a good many scarlet fever and measles cases, as German measles in order to avoid placards. To circumvent that, we wrote into our instructions the following:

"As mild cases of scarlet fever or measles are not infrequently mistaken for German measles, resulting in a localized epidemic of these diseases, and as a few physicians report the more serious eruptive contagious diseases as German measles in order to avoid placards and quarantine, the health officer will inspect all cases reported by physicians as German measles. If after examination the health officer regards the case as a contagious disease requiring placards instead of a case of German measles, he will telephone a report to the division chief. The case will be assigned promptly to a supervising health officer, who shall make one or more attempts to reach the attending physician by telephone, and if successful, ask him to see the patient with him. In any event the supervising health officer must promptly see the case. If a disease is found requiring placards, the supervising health officer must quarantine and make report in usual form." We inspect every case of unvaccinated chicken-pox to confirm the diagnosis of the attending physician. I believe this bill is absolutely feasible—in our city at least.

Dr. Charles J. Hastings, Toronto, Ontario: I quite agree with Dr. Rawlings that a well-organized department of health in any municipality ought to be able to carry out every clause of the act as presented. With regard to the report of cases I think it is frequently our fault in not keeping in close enough touch with the general practitioner. In my judgment, the most valuable asset that any department of public health has is the entire cooperation of the profession in the municipality for which the health officer is responsible. It is not uncommon for physicians in Toronto to call up the department of health, if there is any doubt with regard to a case of communicable disease, and ask to have one of our diagnosticians call and see the case. By doing so we relieve the family physician of the responsibility of having the family quarantined. The honest physician is frequently placed in an unfavorable position with his patients by an unscrupulous doctor who has attended a case next door and did not report it. I am thankful to say that we rarely have cases of this kind, but when we do we prosecute them forthwith. It is our duty to do so both to the public and to the honorable and conscientious physician who promptly reports his cases. I presume all departments of health require two negative swabs for release of diphtheria cases. I think that departments of health should require that some physician from their laboratory take the releasing swab. This also relieves the family physician from being accused by their patient for keeping them quarantined unnecessarily long and at the same time prevents the faking physician from sending in a bogus culture. I am sorry that Dr. Trask passed over the matter of venereal diseases so lightly as he did. I think there is nothing that will bring down the anathemas of future generations on the activities of departments of health more than our absolute disregard for the control of venereal diseases, a class that is probably of more national importance than all other communicable diseases combined; and yet we are in a sense practically disregarding them, afraid to touch them, on account of — what? Of the conditions under which they are contracted. Departments of health have nothing to do with the conditions under which they are contracted. If we are going to handle these diseases efficiently we must handle them as we would small-pox, diphtheria, or any other communicable disease, we must divorce them from the social aspect entirely. We have nothing to do with that; we have simply to deal with the dangers to humanity of these diseases. If we go on, with our heads buried in the sand, as we have been doing in the past, there is going to be great reflection on our deficient administration.

Dr. J. W. Trask, Washington, D. C.: I am grateful to Dr. McCormack for bringing out the phase of the subject that he did; because others, probably, look at it from the same point of view. Our country has a vast area and a varying density of population. To one whose experience has been largely in a semirural territory, in which, because of its scattered population, progress in securing satisfactory morbidity reports has naturally been delayed, the model law may seem utopian. It is entirely practical as has been shown by those who have just stated that they were already carrying out most of its provisions and that their communities were ready to carry out the remainder. The law is in operation in Kansas in the form of regulations adopted in December, 1913. I prefer not to think of morbidity reports as statistics. When we get sufficiently complete reports, their compilation will furnish us with morbidity statistics; but the main object of the notification of disease is its control in practical everyday health administration. One of the hopeful things is the great interest that is being shown, not only by the people in general, but also by the medical profession, in advancing public-health activities. Every physician who believes in greater public-health activities and in the control of disease, must necessarily abide by his state laws or regulations for the control of disease; he reports his cases and, in addition, shows an interest in the efficient control of disease in his community. Dr. Friedrich's point is fundamental. If nothing is done as a result of the report of a case of notifiable disease, why the report? That can be considered a proper question whether it concerns the primary report to the local health department or the secondary report of the local health department to the state health department. If nothing is done the report has little value. The statistical value of it is not sufficient if actual preventive measures are neglected. I purposely omitted Dr. Hastings' point—venereal diseases—not because I did not believe that they constitute one of the major public-health questions. When we get confidence in the importance of our work and really believe in its value; when we divorce from the health department the licensing of plumbers and the control of plumbing, we will occupy our time with such big, important questions as the control of venereal diseases.

General Practice as a Specialty.—General practice has, in a certain sense, become a specialty. It is true that its ranks contain a larger number than any other branch of the profession, but the large increase of the number of whole-time appointments and of specialists of every conceivable variety in the last few years and months raises a doubt as to how long this numerical preponderance will obtain. But we are at least assured that there is no danger of the extinction of the general practitioner. The intimate personal relation between the individual patient and his doctor is an essential factor which no changed conditions can completely eliminate. It is on the general practitioner that the eyes of the public and the profession are now turned, and we are confident that the trust will be completely justified.—*British Medical Journal.*

UNFAVORABLE COMPLICATIONS FOLLOWING AN INTRADURAL INJECTION OF NEOSALVARSAN

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In the treatment of syphilitic affections of the nervous system three principal methods are at our disposal, namely, intravenous injection of the drug, intradural injection of autosalvarsanized serum (Swift-Ellis), and intradural injection of neosalvarsan (Ravaut). According to the majority of competent observers the first procedure has proved to be of little avail, especially in cases of late manifestations of syphilis of the nervous system, in tabes for example. The reason lies partly in the impermeability of the meninges for the drug. The other two methods aim at a direct contact of the drug with the cerebrospinal axis. Salvarsan, in the light of our present experience, must be abandoned for this purpose by virtue of its caustic action. As this caustic feature is eliminated in neosalvarsan, the latter is the one to be applied.

After the unsuccessful attempts of Wechselman in 1912 and Marinesco in 1913, also of Levaditi and Marie in the same year, Ravaut[1] reported very satisfactory results from direct injections of neosalvarsan into the spinal canal. U. J. Wile, in this country, followed strictly the special technic devised by Ravaut, and in a recent contribution[2] describes the results of his experience with fifteen patients distributed as follows: Tabes seven; paresis five; cerebrospinal syphilis three. Out of this group seven showed marked improvement; the patient with cerebrospinal syphilis gave better results than the cases of tabes and paresis; the tabetic patients without bladder and rectum disorders have been especially benefited by the treatment. In view of this experience Wile expresses confidence in the method of intradural injections of neosalvarsan as devised by Ravaut. As a careful observer he points out two interesting features in this treatment, however, against which he cautions the therapeutist. First, he advises the use of only very small doses of the drug, and secondly, the involvement of the bladder and rectum seem to serve as a contra-indication for the treatment.

My latest experience in the treatment of syphilitic involvement of the nervous system consists chiefly in the use of autosalvarsanized serum. Subject to a later publication in detail, I may say at present that this method has given me far more satisfactory results than any other old or newer methods. Stimulated by the work of Ravaut I attempted to apply his procedure in a case of tabes. In view of Wile's favorable report[2] I feel it a duty to call attention to most undesirable consequences which may follow the use of Ravaut's technic of intradural injection of neosalvarsan.

The patient, a man of 35, presented all the typical symptoms of tabes dorsalis. At the time he came under my observation, pain in the lower extremities, ataxia, incontinence of urine and constipation were the most conspicuous manifestations. Formerly, I was told, he had the usual course of treatment with iodids and mercury. At this time the Wassermann reaction of serum and spinal fluid was positive.

I proposed at once the treatment with autosalvarsanized serum which was promptly accepted. The result from one injection was gratifying. The pain had almost disappeared, the ataxia improved, also the incontinence of urine decreased considerably. Constipation remained unaltered.

For a period of two months the patient felt very comfortable. Soon, however, the bladder disturbance returned. As the Wassermann reaction was at this time positive, the patient finally accepted the offer to have another intraspinal injection which he had repeatedly refused during the past two months. With the patient's consent I had recourse this time to a direct intradural injection of neosalvarsan instead of the autosalvarsanized serum. Accordingly I had the fluid prepared after Ravaut's technic. The solution used was 6 per cent. of neosalvarsan in distilled water. As each drop of the solution contained 3 mg. of neosalvarsan, only two drops were injected from a specially constructed and very accurately graduated syringe. The lumbar puncture was made with a needle the end of which fitted the graduated syringe. After a small quantity of spinal fluid had flowed out of the cannula and been collected in a tube for diagnostic purposes, the syringe was attached and the fluid allowed to run into it in order to mix with the drug. Then the mixed fluid was pushed gently into the canal. The procedure of mixing was repeated the second time. The patient was then placed in Trendelenburg's position.

One-half hour after the injection the patient commenced to complain of severe pain in the lower limbs, which in subsequent days became more and more pronounced. Vomiting appeared on the same day and kept up for six consecutive days. Retention of urine took the place of the former incontinence. Incontinence of feces made its appearance. All these symptoms continued without relief. On the fifth day small erythematous patches appeared on the glans penis, on the scrotum and on the sacrum. They gradually became larger and finally distinctly gangrenous.

Two weeks after the injection the patient presented the following condition: He was unable to stand or walk; he suffered agonizing pain in the lower limbs so that sleep was impossible; retention of urine and incontinence of feces were exceedingly disturbing; the gangrene of the above mentioned areas was becoming more and more profound; the temperature reached 102 and 103 F.; he vomited daily, lost his appetite and was losing weight. Gradually the condition grew more and more alarming and finally he expired.

This case seems to militate against the direct intradural use of neosalvarsan notwithstanding the favorable reports of Ravaut and Wile. It is possible that Wile's suggestion with regard to the sphincter complications as being a contra-indication for this treatment has its *raison d'être* here. Nevertheless the damage done by this procedure even in one case sufficiently deserves the attention of those who contemplate the use of this method. Perhaps further investigations on animals and a more carefully elaborated technic will enable us to view the method in a more favorable light. In a recent contribution Corbus[3] reports an experience similar to mine.

1812 Spruce Street.

1. Ravaut: Ann d. méd., 1914, p. 49.
2. Wile, Udo J.: The Technic of the Intradural Injections of Neosalvarsan in Syphilis of the Nervous System, THE JOURNAL A. M. A., July 11, 1914, p. 137.
3. Corbus, B. C.: Cerebrospinal Examinations in "Cured" Syphilis, THE JOURNAL A. M. A., Aug. 15, 1914, p. 550.

APPLICATION OF RADIUM IN THE BLADDER FOR CARCINOMA

WITH REPORT OF TWO CASES

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To review at this time the various surgical conditions to which radium has been applied would be without gain, in view of the very recent development of our knowledge and use of this new element, which is being brought to our attention almost daily. We believe, however, that in reporting our cases, we are presenting for the first time a complete history of the action of radium as applied in the bladder in cases of carcinoma, accompanied as they are by cystoscopic examinations before and after application, microscopic examinations of the tumors and end-results.

After a careful review of the literature we find very few cases in which radium was applied in the bladder in cases of carcinoma. One case is reported by Cauhape in which he applied radium to the bladder for carcinoma of the prostate with cure in nine months. These applications were made with radium attached to a catheter and introduced into the bladder per urethram. Twenty-five mg. of radium were used and the applications made every three days, each application lasting two hours. Wickham and Degrais in their latest work do not mention the use of radium in the bladder. The Radium Institute of London in 1912 reported two patients treated with results not noted, and also two patients for prophylactic treatment, reported as improving. The Royal Infirmary of Edinburgh reported no bladder cases in 1912. The foregoing constitutes about all the information that we could obtain, demonstrating that in only one authenticated case, (that of Cauhape) is there any definite report as to the nature of the tumor, amount of radium used, length of application and end-result.

The two cases that have come under our observation are as follows:

CASE 1.—M. J. T., aged 34, consulted us, Sept. 23, 1913. Family history shows that father probably died of carcinoma of stomach. Patient gives history of hematuria for about five years, occurring at intervals of about three months until recently, when attacks became very much more frequent. There had been no pain until shortly before the patient's visit to us. At this time the patient complained of hematuria and sharp pains in right inguinal region radiating to pelvis. Examination showed patient to be in fair physical condition. There was a left bubonocele. In right inguinal region a mass about the size of an orange could be felt. This mass was hard, immovable and extended down into the pelvis. There was edema of the right thigh. Cystoscopy showed a tumor, about the size of an English walnut, situated in the trigon, midway between its center and the opening of the left ureter in the bladder. The tumor was friable. The right ureter was obstructed, but showed urine escaping. Examination of metastatic growth, microscopically, showed the tumor to be carcinoma.

Oct. 7, 1913, a suprapubic cystotomy was done. A tube containing 15 mg. of radium was attached to the lower end of a Freyer tube and introduced into the bladder in direct contact with the tumor and allowed to remain in place for twelve hours. No discomfort was complained of by the patient at any time during the application. The same tube of radium after removal from the bladder was buried in an incision over the metastatic growth and allowed to remain in place for twelve hours. The bladder wound was completely closed on the eleventh day after the operation. Recovery from the operation was uneventful except for unaccountable attacks of pyrexia, beginning forty-eight hours after operation, lasting for three days and recurring again at the end of a week. Three such attacks occurred. Cystoscopy, December 8, two months after operation, showed that the tumor of the bladder had entirely disappeared. The mucous membrane of the bladder appeared normal. Both ureteral openings were obstructed. The metastatic tumor in the groin was about the size of an English walnut. The patient died six months after operation from general asthenia and hydronephrosis due to obstruction of ureters by metastatic growths in the pelvis.

CASE 2.—B. K., aged 67, was first seen by us Jan. 4, 1914. Family history was negative. Patient complained of frequency of urination day and night for about eighteen months. During the last three months he has had pain in the region of the bladder and perineum accompanied by frequency and hematuria. He has lost about 40 pounds in the last three months. His appearance is cachectic. He was discharged from the German Hospital, after ten days' observation, as having an inoperable case. Residual urine was 12 ounces, bloody and ammoniacal. Blood-pressure from 190 to 170. Blood examination: White cells, 18,000; polynuclears, 83 per cent.; lymphocytes 11 per cent.; eosinophils, 1 per cent. Rectal examination shows large hard prostatic tumor. Cystoscopy shows large bleeding tumor slightly to left of left ureteral opening; smaller tumor near the right ureteral opening; also large eroded and bleeding tumor at site of prostate. The entire mucous membrane of the bladder appears infiltrated. Diagnosis: Carcinoma of prostate and bladder.

Patient entered hospital January 6, and a permanent catheter was introduced for drainage and irrigation preparatory to operation, suprapubic cystotomy, which was performed January 8. A tumor the size of an egg at the site of the left ureteral opening was removed. A tumor on the right side, somewhat smaller, was also removed. A V-shaped section was removed from the prostatic tumor. The prostatic growth is considered by us to have been the primary focus in this case. The section taken from the prostate also provided better drainage through the urethra. The same procedure in the use of the radium was pursued as in Case 1. The bladder was closed in three weeks. The same unaccountable pyrexia occurred as in Case 1. Patient was discharged from the hospital February 5, about four weeks after operation. At this time the patient was passing clear urine four times a day and every three hours at night at our direction to prevent distention of bladder and reopening of suprapubic wound. Patient gained 26 pounds in weight in two months. Cystoscopy, April 22, showed bladder mucosa apparently normal, the surfaces from which tumors had been removed appearing as small pale, depressed areas. All of the surfaces appeared to be covered by normal mucous membrane. Rectal examination showed prostate greatly diminished in size and of normal consistency. Residual urine, 3 ounces.

The pathologic report of Case 1 is from the laboratory of St. Francis Hospital; the pathologic report of Case 2, is from the laboratory of the City Hospital.

CONCLUSIONS

1. We may without danger, even without discomfort to the patient, place in the bladder as much as 15 mg. of radium and allow it to remain as long as twelve hours.

2. We believe that we have shown that radium has the power to remove a tumor of the bladder (carcinoma) and of the prostate within a period of two

months. It has also been demonstrated in Case 1 that radium has had a very decided effect in reducing the size of a metastatic growth associated with carcinoma of the bladder.

3. No difference seems to have been evident in the result whether or not part of the tumor was removed. In Case 1 no part of the tumor was removed, while in Case 2 a considerable portion of the tumors was excised.

4. We are of the opinion that the peculiar pyrexia associated in both cases was due to an absorption following the destructive influence of the radium on the tumors. A thorough investigation did not disclose any other cause.

We wish to take this opportunity of thanking Dr. Wolf Freudenthal for the use of the radium applied in these cases.

10 West Sixty-First Street—1847 Madison Avenue.

A CASE OF BACILLUS DYSENTERIAE SEPTICEMIA

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In the literature at my disposal, instances of isolation of the *Bacillus dysenteriae* from the blood during life seem to be very few in number. Darling and Bates (*Jour. Med. Sc.*, 1912, cxliii, 36), report a fatal case from which they recovered from the circulating blood the *B. dysenteriae* of the Shiga type. All of the references at hand either make no mention of the *B. dysenteriae* entering the general circulation or state positively that it does not do so. It seemed to be of interest therefore to report the following case which was seen in consultation with Dr. C. G. Hutson of this city.

The patient was a 3-weeks-old breast-fed infant which had been in perfect health before the onset of the disease. For a day or two the baby refused to nurse, became irritable, restless and did not sleep. The child was stupid and listless, whined at times and objected to the slightest touch. Physical examination revealed no abnormalities or pathologic processes in any of the organs. The temperature was 103 and pulse 180. At this time there was no diarrhea. In consideration of the fact that the grandmother of the infant was suffering in the same house with typhoid fever, a blood-culture was made. As we were unable to enter a vein, the blood was taken from the great toe and placed in bouillon from which the *B. dysenteriae* was obtained in pure culture. Although the baby's toe was carefully cleansed and the blood dropped directly into the bouillon, we did not give much significance to the result of the culture.

The baby continued to have a fever varying from 101 to 104.5 in spite of antipyretic measures and also developed a watery diarrhea. Five days later the baby suddenly began to have severe convulsions which came on every few minutes and lasted from five to ten minutes. When seen the hands, face and feet were very cyanotic, the pulse thirty to the minute, the breathing of the Cheyne-Stokes type, the pupils dilated and inactive to light, divergent strabismus, the tendon reflexes absent (at the first examination they were normal), and the child comatose. Through a lumbar puncture needle the spinal fluid flowed out quite rapidly, but contained at least one-half blood. The fluid came as bloody at the end of the flow as at the beginning, in fact, the needle was withdrawn and reintroduced at three different places with the same result. After the removal of 3 or 4 c.c. spinal fluid the convulsions ceased for a time, the pulse and respiration improved, and the cyanosis cleared up. The child died several hours later. Post-mortem was refused.

The spinal fluid obtained was carefully placed in bouillon and an organism found which was identical in all respects with the one obtained in the blood-culture.

The organism cultivated from the blood and spinal fluid had the following characteristics: It was a Gram-negative short bacillus, only sluggishly motile, and did not produce indol in five days or coagulate or digest milk. It produced acid in litmus milk and this remained so for three days. In dextrose, levulose, lactose, mannite, galactose, maltose and dextrin bouillon this bacillus produced acid but no gas in twenty-four hours. Saccharose and inulin were unchanged. At the end of three days the mediums remained unchanged.

The organism corresponding to these reactions is the bacillus "Rosen" (from dysentery) and we therefore concluded that this was a case of *Bacillus dysenteriae* septicemia. The finding of the same organism in the bloody cerebrospinal fluid and the blood taken from the child's toe convinced us that the organism had been present in the general circulation from the onset of the illness. Death was no doubt due to the cerebral hemorrhage rather than to the toxemia. Nevertheless this case with the fatal case previously mentioned would lead one to think that the advent of the *B. dysenteriae* into the general circulation means a fatal outcome of such cases. More reports of *Bacillus dysenteriae* septicemia are necessary, to be sure, before drawing such a conclusion.

The source of infection could not be ascertained. The child was breast fed and the parents denied having given it any other food. It may have been given unboiled water, but this they also denied. The sick grandmother handled the infant and even kissed it on the mouth several times. The diagnosis in her case, however, was unquestionably typhoid fever, as a blood-culture done by Dr. A. L. Smith in our laboratory revealed an organism identical in all its reactions to the *Bacillus typhosus*.

417 Holston Bank Building.

HYGROMA OF THE GROIN

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The following case of hygroma in the groin is of interest on account of its apparent rarity and also because the method by which healing was finally induced is not commonly in vogue.

Surgical literature contains very little concerning hygroma in the groin. In a carefully prepared paper by Dowd in the *Annals of Surgery* for June, 1913, in which are reported several of his own cases, he goes over the literature of hygroma and refers to the fact that it seldom appears in the groin. A rather painstaking search fails to reveal any reported instances of cystic formations in this region, though, doubtless, cases have been noted, for the abundant supply of lymphatic tissue here would indicate a fertile field for their development.

The patient was a boy of 16 who was sent me with a diagnosis of psoas abscess, to which clinical appearances pointed. There was present at the upper and anterior aspect of the right thigh a large tumor extending from the groin half way to the knee, with the characteristic feel of a tense abscess. On the outer side of the thigh there was a discharging sinus through which a probe could be passed to a point over the head of the femur. Examinations of the hip-joint and spine were, however, negative, as were also roentgenograms of these parts.

Nevertheless, the clinical picture was one of cold abscess. The swelling had enlarged rapidly, having developed in three months without pain or temperature, and there was no history of injury or infection.

The patient was taken to the Post-Graduate Hospital, and incision of the tumor resulted in the evacuation of about a quart of a clear, straw-colored fluid which contained no pathogenic organisms. Exploration revealed a multilocular cavity extending to the ramus of the ischium without definite source of origin, the bone not being involved. There was no connection with the sinus on the outer side of the thigh. The cavity was lined with an extremely delicate membrane, but there was apparently no limiting membrane of a fibrous nature, the resistance of the muscles and fascia acting as a retaining wall.

The cavity was thoroughly scraped and allowed to drain. A few days later a constriction half way toward the ischium closed and the upper end of the cyst rapidly refilled, neces-

sitating a second opening, which was followed by scraping and the application of iodin. The sinus on the outer side of the thigh, which was probably the remains of a ruptured cyst, was also thoroughly scraped. Both cavities were treated with iodin, phenol (carbolic acid), bismuth and argyrol over a period of fourteen weeks without any attempt at healing from the bottom, although both contracted in circumference. There was still a free secretion of clear fluid.

In view of the effect of the Roentgen ray on old tuberculous sinuses, many of which will heal under its influence, the patient was given a four-minute exposure with a hard tube. At the end of ten days both sinuses had begun to fill in at the bottom. Three other similar exposures at intervals of ten days completed the cure.

The laboratory report on the scrapings removed from the cavity was not conclusive, owing, no doubt, to the fact that the specimen was taken at the second operation and did not include enough of the lining membrane to determine its exact nature. It would seem, however, that from the delicacy of the lining membrane, the multilocular character of the cyst and the rapidity and force of its growth, the case should properly be classified under the head of hygroma.

40 East Forty-First Street.

Therapeutics

PREVENTION IS GREATER THAN CURE

(*Continued from page 1761*)

IX

EUGENICS

This very large social, economic, medical, religious and legal subject should receive a passing thought in this series on preventive medicine.

Briefly, heredity and environment are the two factors that are most prominent in the production of physical and mental health. Environment may improve or mar heredity, but cannot change it. Heredity is therefore the most important factor in raising and developing an ideal race. Scientific selection in breeding animals and plants has proved its value beyond all possible refutation. The importance of good environment for the perpetuation of physical and mental health is so well understood that it requires no discussion. But environment will not eliminate a hereditary tendency to disease or to mental or physical insufficiency. Neither will environment develop perfect mental and physical health when there is an inherited deficiency, although environment can markedly improve deficiency caused by injury or acquired by disease.

The long gestation, still longer nursing, and yet longer helpless period of the human embryo and human infant demand the long nourishing care of the mother by the father and by the community. This means that for at least two years the father must provide food, protection and comfort, if not luxury, for the mother and child as well as for himself. If he fails in this duty, some other person, some charity, or the community must assume the duty. This being the fact, worthless, incapable and mentally or physically diseased fathers are a tax on the community.

All kinds of beautiful and necessary charities are succeeding in their aim to raise to adult life defective children, as well as to save the well and strong. A large number of these mentally, physically, and often through heredity, morally defective persons assert the right to marry, and do so, and another crop of defective children is the result. Our orphan asylums, hospitals, sanatoriums, homes, insane asylums, jails and prisons are being overfilled in consequence of the foregoing conditions. What are we going to do about it?

The environment of prospective fathers and mothers and their future children is being constantly improved by the public health advances now being made in all communities, but as has been stated, this will not prevent the ravages of inherited disease (syphilis, epilepsy, insanity, imbecility, physical weakness) or of the inherited tendency to disease (tuberculosis, cancer, gout, diabetes, alcoholism, etc.), any more than environment can produce twins, beauty, geniuses or permanent health. In fact, improved environment is doing more for the defectives in all lines than for those of good heredity, who would survive a less improved environment.

The question for discussion, then, in this one on eugenics is, who shall marry, and who shall have children? It seems doubtful whether the law or the state can, in the present status of the human age and of civilization, enforce scientific selection or compel complete physical and mental examination of a man and woman before they may be allowed to marry. Public health and welfare education, medical teaching and instruction, and the higher education emanating from the church may, in a few decades, make this problem one that is readily decided by the families of the contracting parties, or even by the young man and young woman most deeply interested. On the other hand, it is possible that the age is ripe for an insistence that known defectives and known diseased individuals be allowed to marry only when the other member of the contracting parties is made cognizant of the fact, and also that means be taken to prevent offspring from such alliances. Such defectives often breed readily and lavishly, and their progeny are often no comfort to themselves, and are more than likely to become a future, if not an immediate, tax on the community and state. This brings up the question of either prohibiting marriages of defectives (known to be such through public charities or public institutions and hence not ascertained by the compulsory examination of private individuals), or of legal sterilization of such defectives.

THE SCHOOL QUESTION

The following are a few suggestions of important subjects that medical men should impress privately on their families and publicly in their communities:

1. A child should be healthy before it goes to school (adenoids, tonsils, teeth, anemia, debility, etc.).

2. The kindergarten methods of teaching should be investigated, as some parts of this teaching are objectionable, and especially should the eyes of these young children not be overtaxed.

3. The best age for a child to attend a kindergarten is from 4 to 6 years; but the ordinary child at 6 years of age is too young to enter real school work. It would be ideal, from a physical point of view, if the child could then have one year, or in some instances two, in a "play school," combining physical exercise with moral and mental development. Then the child would be well fitted to attend real school.

4. The location of school buildings is important, and the architecture and equipment of such buildings are very important.

5. There should be well-equipped playgrounds in all cities.

6. The books, pencils and other school paraphernalia should be antiseptically cleaned, and clean aprons could well be provided for dirty kindergarten children.

7. Teachers should be mentally efficient, and should be physically examined at regular intervals as to their health. A physically and mentally "fit" teacher is essential for good school work.

8. Open air or open-window schools, and luncheons for underfed children should be inaugurated.

9. Kissing and the exchange of pencils and penholders among children should be discouraged.

10. There should be a trained nurse attached to each large school.

11. There must be medical inspection, if not medical examinations.

12. There should be segregation for feeble-minded, as well as for otherwise defective children. Anemic children, and those with a tuberculous tendency should be in open air rooms.

13. Night schools should have medical and sanitary supervision, especially if such schools are held in the rooms occupied by the children in the daytime.

14. The crime of child labor should be prevented.

SCHOOLHOUSES

The location of the city schoo: cannot always be carefully selected; the school must be placed where it is most needed. The country school, however, should be located high and dry, and with a careful consideration of its sanitation, that is, its water-supply and the proper management of its sewerage system.

There is no excuse for having a country school more than two stories, and if possible, a city school should be but two stories high. The frequent going up and down of long flights of stairs is especially bad for growing girls. The light should be sufficient, and should not shine directly into the pupils' eyes, but should best enter the room from the left and the rear. The blackboards should be so placed as to receive the best light. The temperature should be from 65 to 68 F. Moisture should be sufficient, but not excessive.

The desks and chairs should be very carefully selected, and one or both should be adjustable as to height. Even with such adjustment the children should not be kept too long sitting, but should have walking, or simple calisthenic exercises to stimulate the circulation and ease the muscles.

The floors should be hard finished, so that they may be readily cleaned with vacuum cleaners, and the furniture should be such that it can be readily cleansed with antiseptics, when such are needed. In fact, daily washing of the floors with some antiseptic may be advisable. The toilet and washing arrangements should be of the best, and sanitary drinking facilities should be installed in every school.

Some one or more rooms should be arranged as open-window rooms. Every large school should have a private examining room for the use of the examining physician and the trained nurse. Every school, if possible, should have a properly equipped playground.

HOURS IN SCHOOL

The kindergarten is undoubtedly good for children whose mothers cannot care for them and who otherwise would be on the street, but the kindergarten teaching is often bad for children who are already pushed mentally in their own homes. We are not sufficiently careful to prevent mental fatigue in schoolchildren, and the number of hours generally devoted to school work is much too great. R. O. Clock[1] has studied this subject, and makes suggestions which should be carefully considered. He believes that from 7 to 8 years of age two hours of actual school mental work is sufficient; from 8 to 9, two and one-half hours; from 9 to 10, three hours; from 10 to 12, four hours; from 12 to 14, five hours. The longer periods should, of course, be broken up into two sessions. At all ages the sessions should be interrupted with from fifteen to thirty minutes' recess for fresh air and relaxation. It has been ascertained that a child at 6 has brain fatigue and his attention tires after fifteen minutes of concentration; from 7 to 10, after twenty minutes of concentration; from 10 to 12, after twenty-five minutes of severe work; and from 12 to 16 after thirty minutes. The best brain work has been found to be accomplished in the morning, and fatigue is more rapid in the afternoon, and more rapid when there are bad air and dark or overheated rooms. The brain activity is increased after gentle muscle exercise; hence the advantages of calisthenics and recesses.

It is little less than a crime to spur on brain work without proper exercise and outdoor play, and some pupils, little more than children, are stimulated to mental overactivity and to attain high standing without regard to whether or not they have time for fresh air. Before the age of 12 years a child should not be required to study at home. The crime of pushing children forward, rushing their advance from one grade to another, should cease. The child should advance by natural ability and natural progress. Cramming and pushing to get a certain amount into his brain at a certain date, and then to get him out of his grade into another to make room for one who is being pushed and crammed in the grade below should be abolished.

OUTDOOR EXERCISE

Playgrounds, and regular hours for their use, and the occasional presence and direction of games or exercises by a physical instructor, all work for the great good of the future sturdy citizen.

Weak children should not be allowed to play or exercise to exhaustion. Also, even with strong children, the necessity for bodily repair by rest periods should be urged. The story of nutrition, metabolism and elimination of waste products, and the repair during rest should be understood by all teachers. The bedtime hour for children of different ages should be taught by the teachers.

Competitive physical, and even mental tests or stunts are bad, very bad for some. It is always injurious for growing boys and girls to sustain long physical strain, and it should not be allowed by school boards in schoolchildren. This does not mean that under proper jurisdiction there should not be baseball games for boys and basketball games for girls, etc., but competitive stunts, as just stated, should not be allowed. Secret societies which cause jealousies and cliques and ill feelings should not be allowed, although certain open, non-secret societies whose membership is reached by good work and whose object is to accomplish good work are often excellent training.

(To be continued)

1. Clock, R. O.: Dietet. and Hyg. Gaz., September, 1912.

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SATURDAY, NOVEMBER 21, 1914

WHAT RENDERS A DIET INADEQUATE?

In the nutrition investigations of the present period there is an unmistakable tendency toward emphasizing the qualitative aspects of the dietary quite as prominently as the purely quantitative features of the food intake. The appreciation of the importance of an adequate supply of food units has become wide-spread in the ranks of the layman as well as the specialist. The need of energy for the working of the human mechanism has become quite as self-evident as is the necessity of fuel in the omnipresent automobile. The principle of the conservation of energy and matter is recognized on all sides. The less familiar conception of the specific rôle of certain food substances is only beginning to make its influence felt. The story of the vitamins and the part they may play in the pathogenesis of such diseases as beriberi and scurvy is preparing the way for a wide-spread interest in what has hitherto been relegated to a minor part in nutrition.

Writers on animal nutrition have long employed the expression "balanced ration" in connection with feeding practices in modern agriculture. By this they refer to a mixture of the nutrients in which the proteins, fats, carbohydrates and inorganic ingredients are present in certain relative proportions. The requirement of an irreducible minimum of protein and of inorganic salts has become obvious; but how inappropriate even the so-called balanced ration may be under some circumstances was plainly demonstrated in the Wisconsin experiments with cattle[1] in which failure followed the attempt to supply the nutrients from a single plant source. It is evident that there are details of composition with respect to the food-supply which scarcely suggested themselves in the cruder surveys of the nutrition situation, but which nevertheless spell success or failure in any prolonged dietary regimen.

The reason that the importance of hitherto unsuspected features was not recognized earlier may lie in the fact that most individuals are accustomed to a fairly wide range of food products—a condition under which deficiencies in minor, though important, constituents are less likely to arise. The extremes in nutrition are therefore most likely to appear under experimental conditions; and in this field of knowledge, as in so many others, the laboratory animals have furnished new and useful points of view from which to approach the problems of the human dietary. In illustration we may refer to the newest studies from Professor Hofmeister's laboratory in Strassburg published just prior to the outbreak of European hostilities which threaten to put an end to so much of the best in the medical sciences of to-day. Oseki[2] had shown that it was possible to keep mice in good nutritive condition for considerable periods of time on a diet of coarse rye bread, the *Kommissbrot* of the Germans. This product may accordingly be designated as a food both quantitatively and qualitatively adequate for the species investigated. It appears, however, according to the newest experiments of Tachau,[3] that additions of apparently innocuous substances, including sugar, fats and certain salts, may suffice to render these appropriate diets no longer suitable for adequate nutrition.

The conversion of a diet which seems to meet the requirements of an animal satisfactorily, into one obviously inappropriate, by the mere superposition of products that commonly enter into the dietary, would scarcely have been suspected a few years ago. In the mice under consideration the disproportions in the food, produced by large additions of sugar or fat, resulted in gradual decline of body-weight ending in death. To explain this, various hypotheses suggest themselves. Anorexia may have resulted from the "one-sided" diets, leading to gradual inanition from insufficient food intake. The digestibility of the ration may have become impaired by the unusual preponderance of individual foodstuffs. The upset in the usual interrelations of protein, fat and carbohydrate may have made itself felt in some feature of intermediary metabolism. After all, it matters little whether any or all of these explanations apply in this case. The lesson to students of human nutrition lies in the warning that much remains to be learned before we can pronounce the final word with respect to what constitutes a balanced ration.

In Tachau's experiments some of the animals received additions of undue amounts of certain salts—sodium chlorid, sodium phosphate, sodium sulphate, sodium lactate—to the otherwise suitable ration. In these cases, in contrast to what happened when the organic admixtures were added, upsets in the osmotic phenomena of the organism frequently made their appearance, leading to an abnormal distribution of water and the exhibition of edema. The production of this symptom by the continued administration of salt in large quantities belongs among experimental

1. Unappreciated Factors in Diet, editorial, The Journal A. M. A., March 2, 1912, p. 637.

2. Oseki, S.: Untersuchungen über qualitativ unzureichende Ernährung, Biochem. Ztschr., 1914, lxv, 158.

3. Tachau, P.: Versuche über einseitige Ernährung, I, Biochem. Ztschr., 1914, lxv, 253.

novelties. An added interest is attached thereto because a similar phenomenon has been described in infants after ingestion of excessive quantities of salt.[4] In the adult "latent" accumulations of fluid do not become evident so readily in the same way.

THE SIGNIFICANCE OF GLYCURONIC ACID

How sugar is burned up, or metabolized in the organism is a question that interests every one who has to deal with the nutritive functions of the body either in health or disease. The discovery of glycuronic acid, $COOH.(CHOH)_4.CHO$ — a compound closely related to glucose and other carbohydrates and derived therefrom by slight oxidation—as an occasional constituent of the excretion early gave occasion for the speculation that it is derived from carbohydrate in the body. A further step in the way of hypothesis has been to look upon glycuronic acid as an intermediate product of sugar destruction—a stage in the physiologic conversion of the carbohydrate into its final end products, water and carbon dioxid. The fact that when certain toxic products, like menthol, camphor, and many other substances, particularly alcohol derivatives, are introduced into the organism they are eliminated as conjugated glycuronates in no way controverts the hypothesis; for it is easily conceivable that the noxious substances of an alcoholic type combine with glycuronic acid as it is formed, and by uniting with the latter in transit, as it were, through the process of metabolism, they become detoxicated prior to their elimination.

To postulate that any substance represents an intermediate step in the disintegration of a foodstuff in metabolism implies that it is itself easily destroyed in the organism and, under ordinary circumstances does not make its appearance anywhere in the body in any quantity. The failure to meet these criteria ought, we believe, to take a compound out of the category of an intermediate product. These statements apply, of course, only under conditions of health and reasonable feeding. Sugar is a normal product easily consumed by the body; yet there are conditions of disease, like diabetes, in which it fails to undergo the usual conversion into end products.

Glycuronic acid has already been investigated with a view to securing answers to the questions raised. Mayer[1] has reported an apparently ready destruction of this substance when it was introduced into the organism, and his studies have formed the basis for the textbook statements that glycuronic acid is ordinarily readily burned up in the body. The experiments of Mayer are now directly contradicted by the newest researches of Biberfeld[2] at the pharmacologic institute of the University of Breslau. In these, glycuronic acid was recovered almost quantitatively unchanged when it was introduced parenterally into animals. The suggestion thus afforded of the improbability that glycuronic acid is an intermediate stage in the oxidation of the carbohydrates is strengthened by the comparable physiologic indestructibility of other acid oxidation products of the sugars. Neither gluconic acid, $COOH.(CHOH)_4.CH_2.OH$, nor saccharic or mucic acids $COOH.(CHOH)_4.COOH$ are readily destroyed in the body. These facts point to glycoronic acid as an abnormal rather than normal stage in metabolism.

4. Freund, W.: Jahrb. f. Kinderheik., 1914, lix, 421. Meyer, L. F.: Ibid., 1910, lxxi, 1. Schloss, E.: Ibid., 1910, lxxi, 296. Krasnogorski, N.: Ibid., 1910, lxxii, 373. Köppe: Ibid, 1911, lxxiii, 9.

1. Mayer, P.: Ztschr. f. klin. Med., xlvii, 68.

2. Biberfeld, J.: Zum Verhalten der Glukuronsäure im Organismus, Biochem. Ztschr., 1914, lxv, 479.

ABSORPTION OF THE CEREBROSPINAL FLUID

Of the problems connected with the cerebrospinal fluid, some of which have been discussed recently in these columns,[1] that of the paths of absorption of the fluid has been the subject of much interest. Key and Retzius, Quincke and others showed the continuity of the cranial and spinal subarachnoid spaces, in which the fluid is found, and held, with most later observers, that absorption takes place by way of the venous sinuses through the pacchionian granulations and the lymphatic system.

The methods of study have comprised the microscopic examination of the meninges, which has revealed nothing conclusive, and the injection of suspensions of granules, of viscous fluids, of emulsions or of true solutions. The injection of anything but true solutions is open to the serious objection that the paths sought are those of the absorption of an easily flowing fluid and not solids or clogging fluids, which are caught in the meshes of the arachnoid. Weed[2] gives the results of the injection of a true solution of potassium ferrocyanid and iron ammonium citrate into the subarachnoid spaces during life, with subsequent precipitation of Prussian blue wherever the fluid penetrates in the head and neck by fixation of the tissues *in situ* by a 1 per cent. solution of hydrochloric acid in liquor formaldehydi.

By this method, Weed concludes that the chief pathway of absorption is the venous sinuses. After injection of the fluid into the spinal subarachnoid spaces, he finds the path taken by the fluid to be throughout the cranial subarachnoid spaces, and thence, by way of "arachnoidal villi," into the great sinuses. The sinus into which this occurs chiefly is the superior longitudinal, but practically all the others take some part in the drainage.

That the absorption is chiefly cranial Weed believes is shown by the much more rapid absorption and excretion in the urine of phenolsulphonephthalein

1. The Production of Cerebrospinal Fluid, editorial, THE JOURNAL A. M. A., March 28, 1914, p. 1018. New Facts About the Cerebrospinal Fluid, Current Comment, Sept. 19, 1914, p. 1037. The cerebrospinal Fluid, editorial, Nov. 14, 1914, p. 1764.

2. Weed: Jour. Med. Research, 1914, xxxi, 51.

from the cranial spaces than from the spinal, after ligation of the cervical cord and meninges. He finds that the cerebral, as distinguished from the pachymeningeal, vessels play no part in the drainage of the fluid under normal conditions of pressure, and that the subdural spaces are excluded from participation in this escape, since no connection exists between them and the subarachnoid spaces.

The path of escape from the subarachnoid spaces into the sinus he finds to be the "arachnoidal villi." These are projections of arachnoidea into the wall of the sinus, usually about veins entering the sinus, and most numerous in those areas where the great cerebral vessels enter. The arachnoidal tissue, as it passes backward and inward in the wall, becomes myxomatous, and is capped at its end, where it lies in close apposition to the endothelium of the sinus, by one or many layers of mesothelial cells, through which and the endothelium the fluid enters the lumen. Usually these villi are confined to the wall of the sinus, but in adults they may be seen projecting into the lumen, and the myxomatous portion forms the groundwork of the pacchionian granulations. Weed states further that projections of arachnoidal mesothelial cells occur in all portions of the dura, especially about the sagittal and cavernous sinuses, serving as intradural channels for cerebrospinal fluid, which explains the weeping of fluid from the exposed dura after removal of portions of the calvarium during life. He believes that the passage of fluid through the villi is a filtration, rather than a process of osmosis or secretion, since the Prussian blue granules are found in the cells and lumen of the sinus even with high concentrations of injection fluids, and retrograde passage of fluids occurs through the villi on obstruction of the return venous flow from the head.

The lymphatic system appears to play an accessory part in the absorption of cerebrospinal fluid, since after injection into the spinal subarachnoid spaces, Prussian blue is found in the cervical lymph-channels and glands and in the perineural lymph-spaces of the cranial and spinal nerves. About the olfactory nerves, in the meshes of the connective tissue reticulum and in the lymphatic channels of the nasal mucous membranes, large amounts of Prussian blue are found. Weed cites several cases in which fluid containing potassium ferrocyanid ran out of the nose during injection. This drainage seems to occur in a like manner, but to a lesser extent, along the other cranial and spinal nerves.

Briefly, then, we may conclude from the results of Weed's valuable work that the escape of cerebrospinal fluid is chiefly by filtration through arachnoidal villi from the subarachnoid spaces into the venous sinuses, with an accessory path from the perineural spaces of cranial and spinal nerves through the tissue spaces about the nerve to the lymphatic vessels.

SOME FEATURES OF BONE GROWTH

Although calcium is admittedly an indispensable constituent of the diet, the need of this element is far more acute during the period of growth than in adult life when the bony structures, rich in lime and other tissues, have been fully developed. The period of gestation — in reality, likewise a period of growth in a special sense — is excepted, and also the time of lactation, when milk comparatively rich in calcium is being secreted in abundance.

A deficiency in the intake of calcium during the period of adolescence is more than likely to entail disturbances in the development of the osseous tissues. This is, of course, a fact too familiar to admit of discussion here. Nevertheless, the actual character of the bone defects which result from such deficiency is by no means so certain as the supposed familiarity of the subject would lead one to conjecture. Perhaps the morphologic pathologists are confident of their ability to recognize a bone rendered defective from the lack of the essential lime salts. The pathologic chemist is far from convinced as to the indications of abnormal composition under these circumstances. Has not the problem of rachitis and of osteoporosis remained a topic of controversy until the present day?

The lack of satisfying knowledge with respect to the effects of a shortage of calcium in the diet is attributable in the case of the human subject in largest measure to the inability of the student to examine material from suitable cases. Comparatively few investigators have contributed tissue analyses bearing on this topic. Furthermore, the variations in the food intake of the growing infant or child are rarely extreme with respect to their deviation from the normal, so that the effects are never very pronounced and are likely to be concealed when they are contrasted with the broad range of a "general average." For these reasons our best information has come and is further likely to come from carefully planned experiments on animals during their period of growth.

Very recent studies by Weiser[1] in Professor Tangl's institute at Budapest are of peculiar interest, because they involve experiments on growth with diets differing solely in their content of calcium. The ration poor in calcium contained 0.055 per cent. of this element, in comparison with 0.448 per cent. in the comparable dietary. The prolonged lime-poor feeding brings about very apparent changes in growth, which early manifest themselves in undersize or underweight by contrast with control animals. If the calcium deficiency is continued the appetite fails and then nutritive decline may actually ensue. There are, of course, extreme conditions for actual practice, yet they are the outcome of diet deficiencies that are not apparent to the eye and sometimes call for very expert knowledge.

1. Weiser, S.: Zur Kenntnis des Einflusses kalkarmer Nahrung auf die Zusammensetzung der wachsenden Knochen, Biochem. Ztschr., 1914, lxvi, 95.

How many mothers, or even physicians, realize that corn and meat, for example, are very low in calcium? Are they informed as to the distribution of calcium in common foods?

The bones of the individuals deprived of sufficient calcium exhibit a physical make-up that may readily reveal itself in a cursory examination. They are likely to be thin, pliable, deformed and fragile. The skeleton is not necessarily retarded in its external growth, but the bones supplant part of the lack of mineral constituents by an added richness in water.

One of the novelties revealed in Weiser's research is the unexpected presence of not inconsiderable quantities of alkalies—sodium and potassium—in the lime-poor bones. Magnesium, which has been believed by some to replace the calcium when the latter is not available, is after all not correspondingly conspicuous. The changes in the distribution of the inorganic components of the bone are not alike in all parts of the skeleton. The deviations are least conspicuous in the skull and most prominent in the ribs and spinal vertebrae. Many of these facts here elaborated from recent researches have been demonstrated in the past. They will bear repetition so long as the rôle of specific components of the diet is not appreciated more deeply than it appears to be at present in medical circles.

AS TO SANATOGEN

For several years it has been known by physiologists that all proteins taken into the stomach are disintegrated into their fundamental components, the amino-acids, and that they are not absorbed at all as proteins, except in most minute amounts under exceptional conditions. Therefore, no matter what protein is taken as food, the material obtained from this protein by the body is a group of amino-acids, always pretty much the same except in relative proportions, whatever the food. A few proteins lack certain essential amino-acids, but any ordinary diet supplies enough, and more than enough, of each and every amino-acid. Furthermore, since the proteins are completely disintegrated before absorption, it follows that any adventitious chemical substance that is bound to a protein taken in the food does not enter the blood and circulate in the body in the same protein compound.

All the facts stated above are elementary, and should be known by any and every physician who pretends to keep even approximately abreast of the science of medicine. If there are any who do not know these fundamentals, and from certain unwelcome evidence we fear there are, they must be resigned to being told just where they stand. Certainly they have no good excuse for their lack of information, for the physiologists and biochemists have informed them of modern advances in innumerable ways. For ten years and more these facts have been discussed and demonstrated in societies and in medical publications. And yet — there is Sanatogen, prescribed by Geheimrats, Hofrats and also by doctors, and testimonialed as abundantly by men with medical degrees as Duffy's whisky is by centenarians. One can merely throw up his hands. If, as the exploiters of Sanatogen declare, the product "has been endorsed by von Noorden, Ewald, Dührssen, Eulenburg, Neisser, Binswanger, Leyden, Krafft-Ebing, Tillmanns, Tunnicliffe and thousands of other earnest, reputable physicians," we can only say that their earnestness has not been in the direction of grasping fundamental advances in medical sciences, however great the reputation they have gained may be.

In this issue[1] we print another report of exact experimental observation which shows, as was obvious beforehand, that Sanatogen has the properties of its constituents, namely, casein and glycerophosphates. Nothing more nor nothing less could be the case. Bottling dried cottage cheese plus some glycerophosphates, and raising the price many times, may increase its psychic effect, but it will not alter its physiologic action. These facts we have presented often enough, but the amount of paid advertising the proprietors of this compound find it profitable to carry in the United States makes us feel obliged to give them this bit free. That laymen may be persuaded to purchase Sanatogen in the belief that it possesses some occult powers not to be found in its constituents is not surprising. By blatant and persistent advertising, the public can be fooled into buying any product — however valueless — for which medicinal claims are made. But that physicians should prove equally gullible is a sorry commentary on the scientific attainments of the followers of a learned profession.

NEW EXPERIENCES WITH INTRAVENOUS NUTRITION

Not long ago we called attention to the successful experiments of Henriques and Andersen of the physiologic institute at the University of Copenhagen in the field of intravenous nutrition.[2] They succeeded in keeping animals alive for very considerable periods of time by the device of a continuous intravenous injection of nutrients, either by way of the jugular vein or through a splenic vein. By such parenteral "feeding" of completely digested proteins, together with suitable non-nitrogenous food materials, it was possible to secure retention of nitrogen, that is, positive or favorable nitrogen balances in the organism. Inasmuch as the nitrogen in such nutrient solutions was supplied essentially in the form of amino acids, not only is their significance for the nutritive functions thereby conspicuously demonstrated, but also the probability of a pro-

1. Street, J. P.: The Feeding Value of Sanatogen Compared with Commercial Casein with Respect to Maintenance and Growth, THE JOURNAL A. M. A., this issue, p. 1831.

2. See Henriques, V., and Andersen, A. C.: Ztschr. f. physiol. Chem., 1913, lxxxviii, 357; Intravenous Nutrition, editorial, THE JOURNAL A. M. A., Jan. 31, 1914, p. 385.

tein synthesis within the tissues themselves is brought into prominence.

There is no undue flight of scientific imagination in assuming, from the facts of intravenous nutrition with amino acids just recited, that a synthesis of protein can take place in the animal body from the ultimate products of digestion even when they do not traverse the intestinal wall. The latter was, for a long time, looked on as the seat of protein synthesis. It is not impossible, therefore, that digestion products introduced directly into the circulation with avoidance of the alimentary tract may be excreted into the lumen of the bowel, only to be there reabsorbed and thus utilized in the normal manner, whatever that may be. Indeed, it is even conceivable that the injected products come into direct contact with the intestinal epithelial cells through the blood-stream, without the necessity of reaching the interior of the bowel to accomplish this. The problem of the possible participation of the cells of the digestive tube in the resynthesis of protein from digestion products or amino acids constantly recurs.

In a new series of researches Henriques and Andersen[3] have furnished direct evidence bearing on the possible rôle of the intestine in protein metabolism. They have repeated their intravenous feeding experiments on animals from which the entire enteric tract, from the duodenum to the rectum, had been surgically removed. Even in these individuals there was a favorable nitrogen balance. The experiments were not prolonged, owing to the early death of the subjects for reasons that are not apparent; but while they lasted, the indications were in harmony with the other evidence, where we have presented on previous occasions,[4] that the truly nutritive or synthetic functions can be conducted quite apart from the bowel itself.

The significance of the completeness of the digestive processes is emphasized anew in the most recent Danish investigations.[3] Whereas amino-acid mixtures are readily tolerated by intravenous injection and are assimilated, solutions of partially digested proteins — proteoses and peptones—are extremely toxic when introduced into the organism in this direct way. This fact has long been appreciated, but these more elegant experiments have served to confirm anew the current teaching respecting the non-availability of the preliminary products of digestion, such as may be formed in the stomach, for example. Native proteins like casein, egg-white, and even inactivated homologous serum fail to satisfy the nutritive requirements when introduced parenterally; although the serum is not so toxic as are the other protein products mentioned. The "foreign" character of even the purest proteins injected directly into the blood-stream is further betrayed by their prompt excretion through the kidneys.

3. Henriques, V., and Andersen, A. C.: Untersuchungen über permanent-intravenöse Injection von Peptonen und genuinen Proteinen, Ztschr. f. physiol. Chem., 1914, xcii, 194.

4. What Becomes of the Protein Digestive Products, editorial, The Journal A. M. A., Jan. 24, 1914, p. 303.

Current Comment

TYPHOID CARRIERS

Now that the quality of public water supplies has been greatly improved and the practice of milk pasteurization has been widely introduced, outbreaks of typhoid attributed to typhoid carriers are becoming more conspicuous than formerly, although probably they are not really more frequent. A remarkable epidemic due to food infected by a carrier was recently reported by Sawyer,[1] and while this was perhaps exceptional in the number of persons infected at one time, it emphasizes the grave danger of allowing carriers to have to do with the preparation or handling of food intended for general consumption. The still more recent typhoid outbreak at Lehigh University with more than fifty cases and several deaths has been traced likewise by the Pennsylvania State Department of Health to a kitchen employee who proved to be a healthy carrier. Such instances — and they are multiplying fast — suggest that wherever feasible, employees handling foods liable to spread infection should be examined for a possible agglutinating reaction in the blood. In case the reaction is positive, and even when it is negative, but there is a definite history of typhoid fever, bacterial examination of stools and urine should be made. Although such a procedure is not possible in all cases, there are nevertheless institutions where agglutination, and, when necessary, other tests can be made with a minimum of difficulty. Application of the test could probably be made with little inconvenience in connection with the student dining halls of many educational institutions where proper bacteriologic facilities and expert service exist. We know of at least one American university where such a routine examination of the employees concerned in the handling of food has been practiced for several years past. The disaster at Lehigh shows that such precautions are justified, and that with our present knowledge of typhoid causation some responsibility in this regard may be justly expected from college authorities. There are also many hospitals, sanatoriums and public institutions in which the necessary facilities and skill for such examinations exist or could be readily provided, and here, too, it is true that to be forewarned is to be forearmed. In the future uncomfortable questions may be asked when carrier outbreaks occur in large institutions that are provided with bacteriologic facilities.

THE TESTES AND THE SYMPATHETIC NERVOUS SYSTEM

It is a recognized fact that removal of the primary reproductive organs—gonadectomy, as it has lately been termed—may exercise an undeniable influence on the disposition and emotions of the individuals concerned. Psychologists tell us that emotions are the mental representatives of bodily activities. Impulses arising from the viscera or the periphery of the body

1. Sawyer, W. A.: Ninety-Three Persons Infected by a Typhoid Carrier at a Public Dinner, The Journal A. M. A., Oct. 31, 1914, p. 1537.

may accordingly be interpreted in the form of emotional states. Inasmuch as the sympathetic nervous system is closely involved in the functioning of the internal organs and the blood-supply of different parts of the body, the logic of the situation leads one to inquire into a possible interrelation between all of the factors here discussed, particularly the association of dispositional changes following castration with alterations in the sympathetic system. Dr. Wheelon[1] of the Northwestern University Medical School in Chicago has made a careful comparison of certain vascular responses in dogs before and after removal of the testes, in order to secure information as to the effects of such operations on the general functions of the body. His work indicates that normal blood-pressure is only slightly changed as a result of gonadectomy. The irritability of the myoneural junction of the arterial walls, as determined by comparative responses to the same dosage of epinephrin, was constant, within the limits of experimental error, before and after castration. Sympathetic irritability, on the other hand, was clearly lowered after the operation. This was ascertained by the behavior of the circulatory system to nicotin, which was used as a vasomotor stimulant in these cases because of its selective action on the sympathetic nervous system. The evidence was made more convincing by the added fact that testicular grafts were apparently found to restore irritability in castrates practically to normal. Wheelon concludes that a relationship actually exists between the normally functioning testes and the irritability of the sympathetic nervous system proper. Deprived of these sexual organs, the individuals exhibit structural changes followed by alterations in their physiologic and emotional processes.

1. Wheelon, H.: Extirpation of the Testes and Vasomotor Irritability, Am. Jour. Physiol., 1914, xxxv, 283.

THE AVERAGE DURATION OF SICKNESS

It is recognized that much of our data regarding disease is practically valueless because the statistics recorded in different localities and for different purposes are not intelligently coordinated. The facts are on record, but the deductions which can be drawn only from carefully tabulated facts are too often lacking on account of the incompleteness of the records. One of the most promising features about the present public health situation is that the facts regarding disease are beginning to be subjected to the same careful scrutiny and mathematical analysis that have in previous years been given to life insurance tables and other tabulations of business facts. The Prudential Insurance Company of America has issued a reprint containing an address before the National Organization for Public Health Nursing, on "Practical Statistics of Public Health Nursing and Community Sickness Experience," by Mr. Frederick L. Hoffman. After commenting on the well-known lack of uniformity in recording the statistics of visiting nurses, of terminology and of completeness of records, Mr. Hoffman presents the statistics of visiting nurses' associations for Baltimore, Boston, Chicago and Philadelphia for 1912 and 1913. Tabulating these reports, he finds that the four associations in one year gave attention to 58,933 patients, making 429,620 calls, or an average of seven calls per patient. After discussing the general condition of hospitals and hospital treating throughout the country in an endeavor to establish the essentials of an analysis on this subject, Mr. Hoffman finds that the average duration of sickness, as far as can be determined from the fragmentary records, was eleven days for ages under 44 and twenty-three days for ages over 45, and that the average nursing duration for sickness for patients over 45 is seventeen days for males and twenty-five days for females. Many other interesting facts and deductions are presented. Mr. Hoffman's painstaking study of a large mass of hospital reports and statistics is of distinct value, although the most important point emphasized is the meagerness and incompleteness of our data.

AMINS AND URTICARIA

In a recent issue of THE JOURNAL, attention was directed to the occurrence of preformed amins in the foods we eat.[1] It was there pointed out that many of these products derived from bacterial decomposition of proteins are already known to exhibit pharmacologic potency, such as an unmistakable effect on blood-pressure, as well as other physiologic phenomena. We are now reminded of an interesting and novel observation by Eustis[2] on the action of one of these amins—betaimidazolylethylamin, derived from the amino-acid histidin. The introduction of a very small amount of this substance through superficial abrasions of the skin promptly gives rise to a localized edema resembling urticaria. This fact has prompted the assumption that betaimidazolylethylamin formed in the gastro-enteric tract may be responsible for urticaria of alimentary origin.[3] On this hypothesis a rational dietotherapy of such urticaria is at once suggested. Eustis proposes, for example, effective purgative treatment along with abstinence from protein in the diet for some days. He says that the intestinal toxemia can readily be judged by frequent examination of the urine for indican, the presence of which is used as a guide to the allowance of the amin-yielding protein in the diet. There are various theories as to the origin of urticarias. Some of the cases of the disease are singularly intractable. Doubtless they have a manifold cause or origin. The amin hypothesis is surely not without significance.

1. The Amins in Common Foods, editorial, THE JOURNAL A. M. A., Oct. 17, 1914, p. 1398.
2. Eustis, A.: Urticaria—An Experimental Lesion Produced by the Local Application of Betaimidazolylethylamin; Its Relation to Intestinal Toxemia, New Orleans Med. and Surg. Jour., 1914, lxvi, 730.
3. Eppinger, H., and Gutman, J.: Zur Frage der vom Darm ausgehenden Intoxikationen, Ztschr. f. klin. Med., 1913, lxviii, 411.

The Uniqueness of the Individual.—It is impossible to make the inevitable course of a man's destiny comprehensible in all details. Every man from his birth to his death is a unique phenomenon with no exact counterpart in the past or in the future. The observer understands things only within the limits of his own peculiar nature.—Gerhardt Hauptmann.

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest; such as relate to society activities, new hospitals, education, public health, etc.)

CALIFORNIA

Personal.—Dr. Rudolph H. Kocher has been appointed instructor in research medicine in the Hooper Foundation of Medical Research of the University of California, Berkeley. ——Dr. James W. Keeney, San Francisco, is reported to be critically ill at his home.——Dr. Fletcher G. Sanborn returned to his home in Los Angeles, October 24, after an absence of eight months in charge of the Hospital Uyak, Alaska.——Dr. Benjamin F. Walker, Stockton, is in charge of a special first-aid corps organized by a Parisian banker.

New Medical Building.—Working drawings have been completed for the new pathologic building to be erected by San Francisco at the city and county hospital site. The plans call for a two-story building, 97x155 feet. This will contain on the first floor an operating amphitheater, human and animal rooms, inside and outside kennels for housing animals for scientific investigation, a specimen department and cadaver room. On the upper floor will be located two laboratories with the necessary preparation and animal rooms.

COLORADO

Personal.—Dr. J. E. Perkins, mayor of Denver, recently visited Indianapolis to study and inspect the activities of the health board and other departments of the municipal government.——Dr. Franklin E. Wallace, Pueblo, has been elected a member of the state legislature.——Fire in the McPhee Building, Denver, October 3, seriously endangered Dr. Walter A. Jayne who was asleep in his apartment when the fire broke out. He was overcome by smoke, but was rescued by the fire department.

Health Seekers Bureau of Denver.—At a recent meeting of the Denver physicians, the tuberculosis supervisor of the Denver Visiting Nurses' Association told of his work of setting incoming health seekers on the road to life and strength. The physicians adopted a resolution indorsing the work of the supervisor and volunteered to have one of their number assist him during his office hours. Health seeking new comers will find at the rooms of the Denver Visiting Nurses' Association at Fifteenth and California Streets, not only the supervisor, but a physician who will give them an examination and advice between 9:30 and 11 a. m. on Mondays and Thursdays.

GEORGIA

Atlanta Roentgenologists Organize.—On October 29 the Atlanta Roentgen-Ray Society was formed, with an initial membership of fifteen. Pending the adoption of a constitution and by-laws, Dr. George M. Niles was made acting president and Mr. B. E. Sale, acting secretary.

Pellagra and Hookworm at Milledgeville.—The Georgia State Sanitarium at Milledgeville has been selected by the United States government as a station for experimental work in pellagra cases. The patients will be segregated and kept under special treatment and diet, the work being done under the charge of two experts of the United States Public Health Service.——According to examinations made by specialists from the State Board of Health, the percentage of hookworm infection is about 50 per cent. It is estimated that 1,000 cases exist in Baldwin County.

ILLINOIS

Personal.—Dr. William A. Diffinbaugh, Dundee, was thrown to the ground while cranking his automobile, October 23, and fractured his ankle. He is under care in the Sherman Hospital, Elgin.——Dr. Anthony G. Wittman, of the staff of the Elgin State Hospital, has been made medical director of the new Alton State Hospital.

Tuberculosis Dispensary Opens in Quincy.—The dispensary established in Quincy by the Adams County Tuberculosis Association was opened for the inspection of the public November 7, and received patients on the following day. The dispensary will be open on Mondays, Wednesdays and Fridays at hours to accommodate all classes of people.

Elgin Superintendent Seeks Betterments.—Dr. Henry J. Gahagan, superintendent of the Elgin State Hospital, has asked the State Board of Administration for a tuberculosis hospital at an estimated cost of $50,000, a building for incurably insane women at an estimated cost of $35,000, an extension to the dining-room of the institution, and an addition of 500 acres of land to the hospital farm.

Chicago

City to Establish Public Laundry.—Health Commissioner George B. Young announced November 13 that one of the Municipal Bath Houses will soon be turned into a Municipal Laundry for the benefit of the women in the tenement districts.

Anti-Typhoid Inoculation in Holland.—Dr. Caroline Hedger has been asked to go to Rotterdam, Holland, taking with her antityphoid vaccine sufficient for 10,000 Belgian refugees in Holland, where typhoid fever has already appeared. The Chicago Woman's Club has already contributed $300 toward Dr. Hedger's fund. The antityphoid vaccine has been offered free.

Physicians Urge Increased Hospital Accommodations for Contagious Diseases.—Members of the Chicago Medical Society, speaking before the Association of Commerce, November 4, appealed for enlarged hospital accommodations for cases of contagious diseases. It is said that there are more than 40,000 cases in the city every year and that only about 10 per cent. of the number are sent to hospitals; also that the lack of hospital facilities causes failure to report many cases of contagious diseases to the health commissioner for quarantine.

Morals Board Plan.—The council committee on health has recommended the creation of a morals commission of five members whose work will be to study immorality in all its forms, its causes and effects; to recommend measures for the prevention of venereal disease; to report violations of the state laws or city ordinances covering immorality; to study the legal action necessary for the supression of disorderly resorts within three miles of the city; and to recommend measures for the physical and mental rehabilitation of fallen women. The commission is to make reports from time to time to the mayor and city council.

INDIANA

Eye Inspection Ordered.—The Indianapolis City Board of Health has ordered an inspection of the eyes of all school-children, with special reference as to their ability to see ordinary type at an ordinary distance.

Small-Pox in Whiting.—E. L. Dewey, commissioner of the department of health, states that since October 14, sixty-one cases of small-pox have been reported to his department. This department established an isolation hospital October 10. Sixty-one patients have been admitted since that date, and thirty have been discharged. Dr. Edward K. Newton is the resident physician, assisted by four graduate nurses. All children admitted to the public and parochial schools must be successfully vaccinated. Nearly all of the new cases developing are unvaccinated adults. One thing very noticeable about this epidemic is that of variety of types of the disease. One baby aged 3 weeks was admitted on the fifth day of the eruption, a typical confluent type. Those unvaccinated adults for the most part are severe discrete types, a few confluent.

KENTUCKY

Trachoma in Butler County.—Dr. James O. Carson, Bowling Green, with his assistant, spent from October 27 to 29 in Butler County inspecting for trachoma the eyes of the children of fifteen school districts on the north side of Green River. Dr. Carson will make a report of his findings to the State Board of Health, and will also lay the matter before the United States Public Health Service in the hope that a treatment station may be established in this section of Kentucky.

LOUISIANA

Postgraduate School Opens.—The New Orleans Post-Graduate School of Medicine opened for its first session October 26. Dr. Homer J. Dupuy, Jr., is president; Dr. Wilhelm Kohlmann, vice-president, and Dr. Joseph A. Danna, secretary, of the institution. The faculty is composed of staff members of the Charity Hospital, Touro Infirmary, Hotel Dieu and the Presbyterian Hospital.

Reciprocity with California.—At the meeting of the Louisiana State Board of Medical Examiners, October 29-31, a resolution was adopted that the board would accept for registration without examination in Louisiana, all applicants from California who can comply with the rules governing reci-

procity with Louisiana. The board announces that an examination will be held in New Orleans, June 3 to 5.

Personal.—Dr. Espy M. Williams, Patterson, has resigned from the Louisiana State Board of Medical Examiners on account of his removal from the Fourth District, and Dr. Leon J. Menville, Houma, has been appointed to fill the vacancy.——Dr. George W. Lewis, New Orleans, fell October 26, fracturing his left arm at the wrist.——Dr. Arthur W. De Roaldes, New Orleans, who has been ill with pneumonia, is reported to be convalescent.——Dr. Allen J. Perkins, Lake Charles, while driving near Mallard Junction, October 23, narrowly escaped death when a magazine shotgun was discharged at his buggy.

MARYLAND

Personal.—Dr. Joseph W. Holland, Baltimore, has been elected vice-president of the Queen Anne's County chapter of the Eastern Shore Society.——Dr. Frederick H. Baetjer, Baltimore, who was operated on for the removal of glands near the shoulder, October 30, is reported to be doing well.

Adler Memorial Annex Dedicated.—The Adler Memorial wing of the Children's Hospital School, Baltimore, was dedicated on November 12, Dr. Frank T. Goodnow, president of the Johns Hopkins University, making the principal address. The new wing, which is the gift of Simon C. Adler, contains twenty-four beds on the second floor. On the floor below there is a room for the children's use as a playroom, a diet kitchen and a room for Roentgen-ray work.

Foot-and-Mouth Disease in Maryland.—On account of the epidemic of the foot-and-mouth disease among the cattle of Maryland, Dr. Nathan R. Gorter, Commissioner of Health of Baltimore, has issued a proclamation cautioning the public to heat all milk to the boiling point before using, in order to destroy the infection. The state veterinarian is making a thorough investigation and immediately quarantining all dairies and herds where the disease is discovered. Shipment of milk from such dairies is prohibited by the State and City Health departments and by the State Live Stock Sanitary Board. The City and State Health departments are cooperating with the Live Stock Sanitary Board in the warfare on the disease, and men from these departments have been sent to Highlandtown and to Howard County to see that all proper precautions are taken to prevent the communication of the disease to human beings.

MASSACHUSETTS

Personal.—Dr. Barry H. Calkin, Boston, after twenty years of practice in Jamaica Plain, has left for his new home in Nova Scotia.——Dr. Lemuel F. Noble, Boston, sailed for Europe, November 7.——Dr. Aubrey J. Collins, Boston, has been appointed a medical inspector of the health department.

Baby-Saving Sunday.—Many prominent physicians of the United States occupied the pulpits in Boston churches, October 8, preliminary to the meeting of the American Association for the Study and Prevention of Infant Mortality. In their addresses these physicians sought to show the causes of infant mortality and how it may be reduced.

Brigham Hospital Formally Opened.—Exercises in celebration of Founder's Day was held at the Peter Bent Brigham Hospital, Boston, at which the principal addresses were delivered by Drs. William H. Welch, Baltimore, and Frank Billings, Chicago, who emphasized the advantages of a teaching hospital. John P. Reynolds delivered the symbolic silver key of the institution to President Alexander Cochrane and Dr. Harvey Cushing, Boston, speaking on behalf of the staff, reviewed the difficulties of getting so large a plant into full operation and stated that he considered the proximity of the Harvard Medical School as the keystone to the hospital's future success.

MICHIGAN

Sicilian Surgeon in Detroit.—Dr. Franco Bonnarito, professor of surgery in the University of Palermo, Sicily, held a clinic and delivered a lecture at Grace Hospital, Detroit, recently.

Personal.—Dr. James Gostanian, Sault Ste. Marie, after fourteen years' practice in Baraga, has moved to Detroit, October 29. The Chippewa County Medical Society gave a dinner in honor of Dr. Gostanian at the Park Hotel, Sault Ste. Marie.——Dr. Benjamin T. Goodfellow, Clio, suffered a fracture of two ribs in an automobile accident near Clio, November 3.——Dr. James N. Garber, Detroit, who was injured in an automobile collision, October 26, is convalescent and expects to resume practice soon.——Dr. Warren H. Taylor, Flint, is suffering at his home from the effects of a cerebral hemorrhage, October 29.——Dr. Orlando E. Harvey, Howell, assistant superintendent of the state sanatorium, has resigned and will practice in Iowa.——Dr. Albert L. Laing, Escanaba, has been appointed local surgeon for the Soo Line.——Dr. George A. Kirker, Detroit, who has been ill at his home with heart trouble for several weeks, is reported to be improving.

MINNESOTA

Health Body Joins Consolidated Charities.—The Municipal Anti-Tuberculosis Committee of St. Paul, on October 30, voted to go out of existence and unite with the Associated Charities of St. Paul.

Southern Minnesota Physicians to Meet.—The annual meeting of the Southern Minnesota Medical Association will be held in Mankato, December 1 and 2, under the presidency of Dr. Hugh F. McGaughey, Winona.

Personal.—Dr. Christian F. Carstens, Keewatin, has been transferred to the Rood Hospital, Hibbing.——Dr. John W. Lee, Minneapolis, who has just returned from abroad, was arrested in Dublin on suspicion of being a spy.——Dr. Eugene A. Hutchins, Minneapolis, is critically ill at Asbury Hospital in that city.

Specialists Elect Officers.—At the annual meeting of the Minnesota Academy of Ophthalmology and Oto-Laryngology, the following officers were elected: president, Dr. Edward J. Brown, Minneapolis; vice-presidents, Drs. John H. James, Mankato, and Thomas S. McDavitt, St. Paul; secretary-treasurer, Dr. John H. Morse, Minneapolis.

Diphtheria.—One hundred and twenty-one cases of diphtheria were reported in St. Paul, October 29, as against thirty cases during October last year. The health department expected soon to have all cases isolated and the spread of the disease stopped. Forty-one cases were also reported in Minneapolis by the school nurses for the week ended October 30.

MISSISSIPPI

Higher Entrance Standard.—At a regular meeting of the Mississippi State Board of Health on Oct. 26, 1914, a resolution was adopted that the definition of a reputable medical college be amended to read as follows: One which is classed as A plus or B by the American Medical Association until Jan. 1, 1919. After this date said colleges shall require an entrance qualification in addition to four years of standard high school work, one year of college work, including courses in physics, chemistry, biology and a modern language. This to apply to all who graduate in 1919, or thereafter. Those graduating before this to be allowed credit for four years or more of regular practice instead of this additional qualification. This is the twenty-fourth state to adopt this higher requirement.

MISSOURI

Anti-Tuberculosis Campaign.—Dr. Louis C. Boisliniere of St. Louis delivered a series of lectures on tuberculosis in six towns in Knox County, October 26 and 27. The campaign was conducted under the auspices of the Knox County Medical Society and was financed by the county court of Knox County.

Health Meet Postponed.—The Missouri Valley Health Congress, planned to meet at St. Joseph, November 27-28, has been postponed until some time in February on account of the wide interest manifested by the health workers. The scope of the congress will be enlarged and adequate preparations made for the meeting in February.

Physicians to Have Right of Way.—An ordinance was passed in the St. Louis Municipal Council recently, which gives physicians the right of way on public streets. Heretofore the fire department equipment, ambulances, United States mail wagons, police patrols and street railway repair wagons have been the only vehicles which had the right of way.

Medical History Exhibit.—The St. Louis Medical History Club is collecting articles for an exhibit at a loan exhibition illustrating the medical history of St. Louis and Missouri to be conducted under the auspices of the Missouri Historical Society. The exhibition will be held in Jefferson Memorial Building, beginning December 2 and will continue for two weeks.

Elected to the Legislature.—The following physicians, all reputable practitioners, have been elected members of the state legislature: In the Senate, Dr. W. Lee Welch, Mountain View, and Dr. John S. Wallace, Brunswick; in the House of Representatives, Dr. Thomas B. Cook, Rayville, Ray County; Dr. Guy B. Mitchell, Branson, Taney County; Dr. James A.

Waterman, Breckenridge, Caldwell County; Dr. James R. L. Womack, Houston, Texas County; Dr. Cassius M. C. Wilcox, Kirksville, Adair County.

NEBRASKA

Medical Fraternity Chapter Organized.—On November 2, a chapter of the Alpha Omega Alpha Society was organized at Omaha in the medical department of the University of Nebraska. The charter members being the dean, Dr. Willson O. Bridges, Drs. Irving S. Cutter, Charles W. M. Poynter, Oscar T. Schultz and Palmer Findley, and Messrs. Blaine A. Young and J. Jay Keegan.

NEW JERSEY

Dispensaries Opened.—A room in the Paterson City Hall has been asked for as a free dispensary and was opened October 31. The dispensary will receive patients at 9 a. m. and 2 p. m., and will be in charge of City Physician Dr. James F. Briody and Assistant Physician Dr. Joseph W. Williams.——The Tuberculosis Clinic for West Hudson, located at 41 Kearny Avenue, Kearny, established by the Hudson County Board of Freeholders, was opened for inspection, October 17. Dr. Alfred A. Mutter, Arlington, is in charge of the clinic.

Newark's Experience with Vaccination.—A folder with this title is now being distributed by order of the Board of Health. Among the figures given for the small-pox epidemic of 1901-1902 are the following: In 195 cases, totally without vaccination, 56 deaths resulted. Among 70 vaccinated persons exposed to small-pox in their homes, 4 deaths occurred. Among 131 cases in which the vaccination mark was more than 5 years old, there were 12 deaths. In 7 cases in which the vaccination mark was less than 5 years old, there were no deaths.

NEW YORK

New York City

Training Teachers for Defective Children.—The department of New York University for the training of teachers of defective children has 115 teachers enrolled. A clinic has been conducted in connection with this department and the indications are that its facilities will soon be taxed.

Handbook of the Bureau of Infectious Diseases.—A new edition of the Handbook of the Bureau of Infectious Diseases is now ready for distribution. Its scope has been considerably widened so that it now embraces a description of the varied activities of this bureau in all its details. It is at one time a manual of instruction for employees of the bureau and a book of information to students of this department of public health work. On request copies will be sent to those interested.

Milk Pasteurization and Foot-and-Mouth Disease.—The outbreak of foot-and-mouth disease in a large herd of cattle at Woodhaven, L. I., and possibly also at another large dairy farm on Long Island, led to the adoption at the meeting of the Board of Health, November 13, of resolutions requiring the pasteurization of all milk brought into the city. It is said that 99 per cent. of the supply is pasteurized under ordinary conditions, so that this order will not carry with it any serious hardship for dairymen.

Factory and Shop Inspection.—The Health Department has formulated plans providing for the sanitary inspection of all shops and factories in this city. The information thus acquired will be turned over to employers and employees who can then cooperate to secure any needed reforms. The department also announces that through its Bureau of Public Health it will be glad to assist in formulating sanitary industrial standards for the prevention of occupational diseases. This movement is the outgrowth of the garment workers' strike four years ago, when it was ruled that every industry should be responsible for the sanitary conditions in that industry.

Inquiry into Coroner's Officers.—This inquiry is being conducted before Commissioner Wallstein, and thus far a number of coroners and officials of the Health Department have been examined. The testimony presented showed that in 5,749 deaths investigated during the year 1913, necropsies were performed in only about 13 per cent. Dr. James Ewing expressed it as his opinion that this was far too small a number, and pointed out that New York got along with practically no aid from the science of legal medicine and that it was highly inadvisable to allow any one not trained in pathology to diagnose causes of death. A great deal of evidence has been presented, showing that in many instances the cause of death in the coroner's reports is very inadequately stated.

NORTH CAROLINA

Medical Legislators.—Among the members of the medical profession recently elected to the legislature are Dr. Alfred A. Kent, Lenoir and Dr. E. J. Tucker, Roxboro.

Fund for Distressed Belgians.—Dr. Samuel Westray Battle, Asheville, who was appointed by the governor, chairman of the North Carolina State Committee of Mercy to solicit aid for the distressed Belgians, has already $1,000 in hand contributed by the citizens of Asheville.

State Board Exhibit.—The State Board of Health made a creditable exhibit at the recent state fair at Raleigh. One of the attractive features of the exhibit was the analysis of a number of patent and proprietary articles, exposés of which have already been made in THE JOURNAL.

PENNSYLVANIA

The Pittsburgh Bulletin on Contagious Diseases of Children.—The October number of *The City's Health*, the monthly bulletin issued by the Pittsburgh Department of Health, is devoted especially to scarlet fever, diphtheria, measles and whooping-cough. Figures are given showing the abrupt fall in the diphtheria death-rate since the introduction of antitoxin in 1894, the rates per 100,000 population being 140 per 100,000 in the five-year period 1889-1893, 54 per 100,000 in 1894-1898 and 26 per 100,000 in 1909-1913.

Personal.—Dr. John H. Galbraith, Altoona, has been transferred from the associate staff of the Altoona Hospital to the active staff in the orthopedic department.——Dr. William A. Lynott, Scranton, has been appointed a member of the medical staff of the Federal Bureau of Mines in charge of the eye division.——Dr. Charles F. Altmiller has tendered his resignation as pathologist of the Bloomsburg Hospital.——Dr. F. McCall Keating, Philadelphia, has been appointed pathologist, and Dr. W. Wellington Woodward, West Chester, has has been made anesthetizer at the Chester County Hospital.

Philadelphia

Insanitary Conditions in Schools.—A report compiled by Dr. Walter S. Cornell, head of the medical inspection of the public schools says the sanitary condition of the public schools covering 304 buildings gives 586 specific statements of insanitary conditions.

Aid Association Election.—At the annual meeting of the Aid Association of the Philadelphia County Medical Society, November 9, the following officers were elected: president, Dr. Jacob R. Shellenberger; vice-president, Dr. James C. Wilson; secretary, Dr. Lewis H. Adler, Jr., and treasurer, Dr. John B. Turner.

The Making of a Woman Physician.—Motion pictures of the life of a woman medical student were shown for the first time at a private exhibition held at the Woman's Medical College. The pictures, entitled "The Making of a Woman Physician," recently were made at the college and consisted entirely of actual scenes, showing professors and students at their work and play. These films are to form part of the College exhibit in the Educational Building at the San Francisco Panama-Pacific World's Fair.

Personal.—Dr. Seneca Egbert, dean of the Medico-Chirurgical College, was the guest of honor at a banquet given by the first-year class of that institution at Kugler's, November 5.——Dr. Edw. K. Tullidge, a resident of Philadelphia but attached to the Department of Charities, New York, will leave shortly for Vienna, Austria, to serve in the field hospital corps of the Austrian army.——Dr. John E. B. Buckenham has been appointed by Director Harte of the Department of Health and Charities, as superintendent of the Philadelphia Hospital for Contagious Diseases at a salary of $3,000 a year. Dr. Buckenham has been acting superintendent provisionally, succeeding Dr. William H. Walsh, who became superintendent of the Children's Hospital.——Dr. John A. Kolmer, pathologist at the Municipal Hospital for Contagious Diseases, has been appointed to the staff of that institution by Director Harte.

SOUTH CAROLINA

Sanatorium Site Selected.—The site for the State Tuberculosis Hospital has been selected at State Park. The legislature has made an appropriation of $10,000 for the institution, for which plans are being prepared.

Personal.—Dr. William Weston, Jr., Columbia, has been elected chief of staff in the new children's clinic recently opened in that city.——Dr. Thomas J. Strait, Lancaster, has resigned as senator from Lancaster County to accept the

position as superintendent of the State Hospital for the Insane, Columbia.

TEXAS

Measures Against Trachoma in Schools.—A campaign against trachoma in Texas City carried on by the Mothers'-Teachers' Association began October 28, with the examination of schoolchildren. If the parents of children found to have the disease are unable to pay for treatment, the children will be given treatment at the expense of the Mothers'-Teachers' Association.

Personal.—The office of Dr. Ralph Bailey, Gatesville, was destroyed by fire, November 1, with a loss of about $2,000. ——Dr. Ernest W. Nitsche, Jr., Dallas, and Dr. Harold L. Warwick, Fort Worth, are attending the wounded in hospitals in Berlin and France, respectively.——Dr. Alva W. Carnes was pinned under his overturned automobile near Hutchins, October 8, but was only slightly injured.——Dr. Jim M. Hart, Woodbine, was thrown from his buggy in a collision with a street car, October 2, and painfully injured. ——Dr. Frederick K. Fisher, Galveston, was injured in a collision between two automobiles, September 29.——Dr. George W. Nibling, San Angelo, has been elected secretary pro tem. of the Tom Green County Medical Society, succeeding Dr. Lester C. G. Buchanan, San Angelo.

WISCONSIN

Personal.—Dr. Sidney H. Wetzler, Milwaukee, suffered severe injuries and burns when his automobile overturned in Milwaukee, November 7.——Dr. Daniel Hopkinson, Milwaukee, who suffered amputation of a toe recently, is convalescent.——Dr. Raymond C. Meyer, Elkhart Lake, has been appointed local surgeon for the Chicago, Milwaukee and St. Paul Railway.——Dr. Albert F. Schlick, Algoma, has been adjudged insane and ordered committed to the Northern State Hospital.

CANADA

Personal.—Hon. Dr. Joseph O. Reaume, Windsor, Ont., who for many years was minister of public works for Ontario, has been appointed registrar of the county of Essex. ——Drs. Herbert J. Hamilton and Edmund E. King, Toronto, have been elected to the Medical Council of Ontario for the territorial divisions of West and East Toronto, respectively. Sir James A. Grant, Ottawa, the only surviving member of the original Medical Council of Ontario, has again been reelected representative for the University of Ottawa.——Dr. Edward Worthington, surgeon to H.R.H., the Duke of Connaught, has left for England on his way to the front.

Canadian Medical Colleges.—Eighteen students have registered in the first year at the University of Alberta in the faculty of medicine. Dr. Allan C. Rankin, bacteriologist to the university, accompanied the first Canadian contingent abroad.——The number of medical students registered in the first year at Dalhousie University, Nova Scotia, is thirty-four, which is inclusive of dental students. No one has yet been appointed to the chair of pathology in this university. ——One hundred and ten freshmen have been enrolled at McGill University. The Faculty of Medicine offers to furnish the staff for a general hospital for service in the European war.——There are seventy-six freshmen in medicine at Queen's University, Kingston, Ontario. Dr. A. H. Lothrop, formerly of Columbia University, has been appointed Professor of Biological Chemistry. The faculty has offered to equip a general hospital for the front.

Hospital Notes.—The Moncton (N. B.) General Hospital has received a contribution of $1,000 from the Ladies' Aid toward the $8,000 required for completion of the proposed nurses' home of the hospital.——Thirty thousand dollars is to be expended on a new hospital at Miramichi, N. B.——A new hospital is to be built at Timmins, Ont., by the Hollinger Gold Mines Company. It will contain thirty beds.——A new wing was formally opened recently in connection with the Galt, Ont., hospital.——The Owen Sound Hospital, Ontario, is establishing a maternity ward.——The government of the province of Quebec will contribute $15,000 a year to the hospital at Maisonneuve.——The new hospital at Sherbrooke, Quebec, has been opened. It cost $88,229.——Dr. James C. Fyshe, Montreal, Que., superintendent of the Edmonton General Hospital, accompanied the first contingent to England.——Wainwright, Alberta, is to build a hospital at a cost of $10,000.——Dr. B. L. Wickware has resigned as superintendent of the Moose Jaw General Hospital, Saskatchewan. ——A hospital was recently opened at Summerland, B. C. It will accommodate about thirty-five patients.

GENERAL

Health Sermons in Richmond.—Fifteen of the pulpits of Richmond were filled November 8 by physicians in attendance at the annual meeting of the Southern Medical Association, who preached special "health sermons."

Iron Mountain Surgeons State Meeting.—The third annual meeting of the Arkansas Association of Iron Mountain Surgeons was held at Little Rock, November 17 and 18, under the presidency of Dr. Charles S. Holt, Fort Smith, Ark.

Hookworm in Panama.—The Rockefeller Hookworm Commission has established a station on the Isthmus of Panama for systematic work against hookworm which seems to prevail to a degree hitherto unsuspected. Of the first 1,000 persons examined at the laboratory, more than 700 were found to be harboring hookworm.

Executive Committee for San Francisco Session.—The Executive Committee of the Local Committee on Arrangements for the next annual session of the American Medical Association, to be held June 22-25, 1915, in San Francisco, is as follows: Dr. Herbert C. Moffitt, chairman; Dr. Solomon Hyman, secretary, and Drs. Emmet Rixford, George B. Somers, J. Henry Barbat, William P. Lucas and Philip Mills Jones, all of San Francisco.

New York and New England Surgeons Meet.—The twenty-fourth annual meeting of the New York and New England Association of Railway Surgeons was held in New York City, October 21-22, under the presidency of Dr. Clifford A. Pease, Burlington, Vt. New York City was decided on as the place for the meeting which celebrates the quarter-century anniversary of the organization of the association, and the following officers were elected: president, Dr. William H. Marcy, Buffalo, N. Y.; vice-presidents, Drs. David H. Lake, Kingston, Pa., and Halbert G. Stetson, Greenfield, Mass.; corresponding secretary, Dr. George Chaffee, Brooklyn; recording secretary, Dr. John H. Reid, Troy, N. Y.; and treasurer, Dr. James K. Stockwell, Oswego, N. Y.

Meetings of Railway Surgeons.—The Southern Association of Railway Surgeons held its annual meeting in connection with the meeting of the Southern Medical Association at Richmond, November 9, under the presidency of Dr. Duncan Eve, Nashville, and elected the following officers: president, Dr. Thomas H. Hancock, Atlanta; vice-president, Dr. Southgate Leigh, Norfolk, Va.; and secretary, Dr. Clarence H. Vaught, Richmond, Ky.——The twentieth annual meeting of the Big Four Railway Surgeons Association, New York Central Lines, was held in Indianapolis, November 12, and the following officers were elected: president, Dr. Isaac L. Firebaugh, Robinson, Ill.; vice-presidents, Drs. Walter M. McGaughey, Greencastle, Ind.; Clayton W. Russell, Springfield, Ohio, and John C. Sexton, Rushville, Ind.; and secretary-treasurer, Dr. Leonard A. Ensminger, Indianapolis.

FOREIGN

Santoro Prize Given to Discoverer of Induced Pneumothorax.—For his pioneer work on treating pulmonary tuberculosis by an artificially induced pneumothorax, Professor Forlanini of the chair of clinical medicine at the University of Pavia has been awarded the Santoro prize of 10,000 lire ($2,000). This prize is given every two years by the Academy of Sciences at Rome for the most important contribution to science that has direct practical application.

The New Frankfurt University.—The issue of the *Frankfurter Zeitung* for October 25 is devoted entirely to the ceremonies connected with the inauguration of the newly founded university at Frankfurt a. M. It opens with five departments, the medical faculty having enrolled Edinger, Ehrlich, Embden, B. Fischer, Göppert, Herxheimer, Neisser, Rehn, Schwenkenbecher, Sioli, Spiess, Voss, Walthard and others to a total of twenty professors. Many of them are now at the front and there will be few students this year but the university has been duly launched. The Kaiser is said to have signed the statutes of the university on the historic date, August 1. There has long been a nucleus for a university at Frankfurt in several scientific institutes; pioneers in research and accomplishment. Chief among these is the birth-place of the side-chain theory, the Institute for Experimental Therapy and Cancer Research, of which Paul Ehrlich is director. Another is the G. Speyer Institute for Experimental Chemotherapy, where salvarsan first saw the light.

Deaths in the Profession Abroad.—F. Gerlier, aged 74, the Swiss physician who first described in 1886 what he called *vertige paralysant*, a disease attacking farm laborers and stablemen, characterized by attacks of pain, paresis, vertigo, ptosis and muscular contractions. The disease was pre-

valent for a time in his district but then died out. It is comparatively frequent in Japan, but rarely encountered elsewhere.——S. Engelsted of Copenhagen, at one time editor of the *Ugeskrift for Laeger*, and chief of the board of public health, aged 91.——K. Heilbronner, professor of nervous and mental disease at the University of Utrecht, succumbed to apoplexy last month, aged 44.——D. Morisani, one of the leading surgeons of Italy, professor of surgery at the University of Naples and author of numerous works on surgical subjects and of methods of suturing the intestine, fractured patella, etc., aged 65.——Our German exchanges this week add ten more names to the long list of members of the profession killed at the front. Among them is O. Loeb, privatdocent of pharmacology at the University of Göttingen; J. Diebitsch, G. Herrenschneider, Hermann, W. Kösel, W. Magnus, Paradies, Sauberzweig, Timmermann, Wertheim, H. Schultz and H. Barth of Berlin. Ten others are reported as wounded.

WAR NOTES

German Surgeons Decorated.—It is reported from Copenhagen that 118 medical officers have been decorated with the iron cross.

New Appointment.—Col. Michael W. H. Russell, R.A.M.C., has been appointed deputy director general of the Army Medical Service and temporary surgeon-general in succession to Surgeon-General W. G. Macpherson, A.M.S.

Practice of Medicine in France Opened to Belgian Physicians.—The *Medicina Contemporanea* of Lisbon states that a movement has been initiated by the members of the profession in France to throw down the barriers to the practice of medicine in that country for registered physicians from Belgium who may wish to reside in France.

Compulsory Accident Insurance for University Students.—The *Wiener klinische Wochenschrift* states that all students matriculating at the University of Vienna are required now to take out an accident insurance policy for which they pay about 13 cents (50 heller) for the semester. This is in accordance with a state decree, dated September 18, and includes all persons between 15 and 65.

Epidemic Diseases.—The *Wiener klinische Wochenschrift* of October 22, reports for the week ending October 3, 98 cases of cholera in Austria proper (9 in Vienna) and 231 in Hungary, with 11 cases in Vienna since that date. The *Berliner klinische Wochenschrift* reports 617 cases of dysentery in Prussia in the week ending October 3, and states that cholera has appeared at Kiev, and plague at Saloniki and Lisbon.

Servian Government Desires Medical Aid.—The Servian government is in immediate need of the service of qualified bacteriologists and physicians experienced in the treatment of epidemic diseases. The terms of service and remuneration will be made by arrangement. Applicants who are interested should submit their offers with references to the Secretary of the Servian Legation, 195 Queens Gate, London, S.W.

American Red Cross at Breslau.—Our German exchanges of October 20 mention the arrival at Breslau of the American Red Cross party in charge of Dr. Breadbury, accompanied by Count Talleyrand as the representative of the German Red Cross. There are twelve physicians and fifty-two nurses in the party and half of this number were distributed among the Breslau hospitals while the other half continued the journey to Vienna. Four cars with supplies for dressings, etc., were left in Breslau as the special train went on its way.

Funds Required for Physicians of Belgium.—A professional Belgium committee has been formed, consisting of Professors Stiénen and Jacobs of the University of Brussels, Professor Béco of Liége, Professor Schockaert of Louvain and Professor Benglemans, secretary of the National Therapeutic Society of Belgium, for securing immediate relief for doctors and pharmacists deprived of means of livelihood and an annuity fund for the windows and orphans of those killed in the war. Details will be arranged by a central committee in London, representing the United Kingdom.

Physicians Decorated for Bravery in the Field.—The *Wiener klinische Wochenschrift* brings each week an official list of three or four physicians whose name and regiment are thus published by the Austro-Hungarian authorities in token of appreciation for distinguished services and bravery. In addition to these the cross of Franz-Joseph order has been bestowed on Drs. J. Janak, K. Brust and A. Hocevar. The gold cross with the ribbon of the bravery medal has been given to R. Stigelbauer and R. Kaiser. Others decorated are M. Szabo, L. Redlich and R. Kraus. The iron cross has been bestowed on 120 physicians in active work with German troops at the front, including Kümmell, Rehn, Löffler, Payr, Römer, Salomon and Posner. It has also been presented to the trained nurse, Miss Scherhans, at the head of the nursing staff of the German army. She has been working on the eastern battle-line.

Wounded Soldiers and Sailors.—Between October 24 and 26 hospital ships arrived at Southampton, bringing nearly 2,000 invalid wounded troops, including a number of Belgians and Germans, who were sent to hospitals in various parts of Great Britain.——On October 26 the Hospital Ship *Oxfordshire* reached Queenstown from Boulogne, bringing twenty-six wounded officers and 700 wounded non-commissioned officers and men.——An anonymous donor has offered a fully equipped emergency naval hospital to the government, and this hospital, known as the Fourth Naval Hospital, has been erected in close proximity to the Royal Naval Hospital, South Queensferry. The buildings comprise a central administration block of eight rooms with wards radiating from the center of each side and from three of the angles.——The Second Southern General Hospital now has about 600 patients, not including the convalescent branch at Bishop's Knoll. The largest portion of the patients are composed of wounded and sick from the expeditionary force.——The Welsh Military Hospital, offered in behalf of the principality by the Prince of Wales to the War Office, has been accepted and has been located at Netley, to go overseas when required. The buildings are portable and of wood and galvanized iron, and will accommodate 104 patients in four wards pavilions. The hospital is in command of Lieut.-Col. A. W. Sheen, R.A.M.C.

Care of Wounded in Germany.—The surgeon-general of the German army, von Schjerning, published recently in a German lay paper (*Norddeutsche Allg. Zeitung*) the following report on the care of wounded and the health of the troops in the western seat of war. He commented on the difficulties inseparable from the rapid advance of the troops and the fact that at times the violence and long continuance of the artillery fire often rendered it impossible to seek the wounded on the battle-field, because "for days at a time certain points were shelled furiously. Every day many were wounded. The large battles and skirmishes over such a long extent of firing-line has made the care of the wounded extremely difficult. Surgeons and bearers had to submit to the military exigencies of the campaign, and there were many hours when it would have been madness to attempt to bring in the wounded. On the whole, however, the arrangements proved satisfactory in every way. All the wounded had their wounds bandaged on the battle-field, and this done so well that often, in fact, nearly always, the first dressing could be left unmolested until they reached the home zone. The severely wounded were brought at once to the field hospital and then to the base hospitals. As the troops were constantly pushing forward, the field hospitals had to be constantly changed and prompt transference to the base hospitals was necessary. But all was done with as little discomfort as possible. The slightly wounded were taken to the base hospitals in carts, autos or on foot; in one week there were about 40,000 to 50,000 of these, and they were all sent back to the home zone. Every train and vehicle bringing ammunition or other supplies to the front was emptied at once and sent back filled with the wounded. Only very rarely any actual hospital trains came through to the front. We had to use freight trains as we could not let the wounded accumulate for fear of bringing on epidemics. We have succeeded in avoiding this. The health of the troops is good. Catarrhal enteritis —isolated mild dysentery cases—is growing less frequent, and there are only scattered cases of typhoid.

"Of course the journey in the freight cars was not always comfortable for the wounded. But it was better to send the lightly wounded back home where they could get good shelter and care than to let them lie around in more or less demolished houses and often without adequate care. I reiterate: The transportation was satisfactory and the wounded were well taken care of at practically every station. I inspected personally 30,000 wounded at Coblentz, Liége, Namur, Sedan, Montmedy and elsewhere along the front and I did not find one who was not properly bandaged. The work on the battle-field and in the base hospitals was the hardest. Physicians and nurses worked day and night with the utmost devotion of all their energies, and I am glad to say that this was fully appreciated by the Kaiser and the military officers. The large number of iron crosses which have been bestowed on the physicians with the army testifies to the appreciation of their devoted labors. Of course some wounded man here or there did not have everything to suit him and especially the family complained at times. War

nowadays takes no regard for anyone. But it would be too bad to generalize from a few scattered cases, as sometimes happens.

"There are 9,000 physicians in the field. How many are left at home, and who is adapted for service in the field and willing? Surgeons are needed in the home zone too, and as we have sent the wounded back home to be taken care of, the main task is thus placed in the hands of medical men in the home zone, so that we hope there are plenty of physicians and nurses for this task. Many nurses here at the front can find no work to do. It is utterly impossible to use them on the battle-field under present conditions of warfare and the frightful artillery fire. In one of the base hospitals I met Kraus and Pfeiffer and both confirmed my impression that the organization, the personnel and the supplies in the medical department answered all requirements, and they volunteered in addition that the work of the medical men on the firing-line was beyond all praise. As further testimony to this I mention the words of admiration for the work of the medical department spoken by the chaplain in chief for the army who has been at the front. Everywhere under the sign of the Red Cross kindly hands are ready to help and care for the wounded. We can be quite serene. The only thing that has given us trouble at times hitherto has been the transferring of the wounded from the field to the base hospital. But for this service further means of transportation have already been provided. Our Berlin autobus has proved the most useful; I took seventy-five of these along with me at the opening of the campaign. Several other cities have now sent us their park autobuses. And as now the supply of dressing materials and drugs is regularly replenished, we can be content."

LONDON LETTER

LONDON, Oct. 30, 1914.

Great Britain During the War

A visitor to this country would see nothing in the demeanor of the people to show that we are engaged in the greatest war the world has ever seen and in a life-and-death struggle to maintain our position among the nations of the earth; a war which is bringing death into many homes and into every circle in the land. The general feeling is one of calm determination to see this thing through which has been forced on us. In the streets he would notice some changes. At every turn the khaki-clad recruits are encountered and in the fashionable shops there is an unwonted quietness; but elsewhere the motto of the war, "business as usual," requires no enforcing; every one goes about his work as usual, the amount of unemployment is not abnormal, and the necessaries of life have advanced little in price. In London by night a great change would be noticed. The German dropping of bombs from aeroplanes on cities has caused great restriction of street lighting in London. The number of street lights is diminished and those which are used are covered above so that they cannot be seen from aeroplanes. Shopkeepers are not allowed to show lights which illuminate the streets. The metropolis is in semidarkness. As a result a few persons have been run over by motor cars and killed. Many of the theaters have reduced the usual evening performances to two in the week and give matinees instead. Wounded are arriving in such numbers that all the hospitals in the country, permanent and improvised, are being used for their accommodation. In three days as many as 2,000 were landed at Southampton. Over 700 wounded Irish soldiers have been landed at Cork from a hospital ship and distributed in hospitals in the South of Ireland. The War Office has accepted 247 hospitals organized by the British Red Cross, containing 8,077 beds. Free lectures are being given to the public on camp, ship and hospital hygiene, and the usual ambulance lectures have been greatly increased in number and attended by women in large numbers.

EFFECT ON THE MEDICAL PROFESSION

It has been necessary to increase the army medical corps by a large number of surgeons drawn from civil practice who enlist for the period of the war. This has created a shortage of practitioners, particularly of the young men who enter the service of institutions. As a consequence appointments usually filled by men are now offered to women physicians in greater numbers than they can take them. Another effect is a shortage of medical students at the schools, so great as to threaten a deficiency in the supply of physicians in the future. Not only have medical students gone to the front as dressers, but many have enlisted as ordinary soldiers. At Cambridge only sixty-four medical students have entered this year as compared with 116 last year. At one college noted for its medical studies thirty-two entered, but only seventeen came into residence. In order to supply the demand for army surgeons the various medical corporations have antedated their examinations this year. On the field of battle many army surgeons who have distinguished themselves by their bravery in attending to the wounded are mentioned in dispatches and some have met their death. Every number of the medical journals contain obituaries of physicians who have fallen.

THE DRUG SUPPLY

The first effect of the war was greatly to increase the price of imported drugs; but now many drugs have fallen, though the general level is still much above normal. Large shipments of many drugs have been received, and the advice issued by the government, given in a previous letter to THE JOURNAL, to avoid as far as possible prescribing drugs of which the supply was restricted, appears to have been followed. Some drugs, however, have continued to advance in price. Atropin is extremely dear and phenol (carbolic acid) is three times its normal price, because not only is it extensively used as an antiseptic, but it is also employed in the manufacture of explosives. On the other hand, some drugs are lower in price than normal. Menthol is an example for the reason that supplies which would ordinarily have gone to Germany have been diverted to English ports.

Sanitation in Training Camps

The local government board has called on the medical officers of health to cooperate with the military medical authorities regarding the insuring of satisfactory sanitary conditions for the various training camps of the home army, which at the time of writing contain over 700,000 men. The points on which special advantage from such cooperation is looked for are (1) provision of suitable water supplies and prevention of their contamination; (2) disposal of garbage and refuse; (3) drainage and conservancy, and (4) control of infectious diseases and disinfection. The good effects of this cooperation were soon manifest, and it is worthy of note that up to October 10 among 600,000 men there had been only ten cases of typhoid fever. A committee is to be formed consisting of members of the society of medical officers of health and the military medical authorities to coordinate this work.

Prize for Army Sanitation

The Chaddwick Trustees have announced that they will award the Gold Medal with a premium of £50 to the medical officers of the army and navy, respectively, who shall be adjudged, on the nomination of the Directors General of the respective services, to have achieved the most toward promoting the health of the army and navy, the military medical authorities to coordinate their work. The War Office has also lost no time in sanctioning the construction of an apparatus devised by Mr. James Menzies and Dr. Myer Copland for a system of destructive distillation of sewage, capable of providing for 12,000 men in the field.

Khaki the Usual Costume

Not only in universities "khaki's your only wear," for, besides being accepted as "academic costume" at Oxford and Cambridge, barristers have been allowed to appear in khaki in court, in place of the time-honored wig and gown on throne, that is, those who are called up in their territorial regiments and can get leave to attend to some of their professional duties.

The American Women's Hospital at Paignton

An interesting note on the American Women's Hospital, by Mr. Ernest Lane, F.R.C.S., Surgeon to St. Mary's Hospital, London, who is in charge, appears in the *St. Mary's Hospital Gazette* for October. Mr. Paris Singer placed his residence at Paignton, overlooking Torbay, on the beautiful Devon coast at the service of the American ladies, and the entire cost is sustained by Americans. It contains 200 beds with operating theatre, Roentgen-ray room and admirable lavatory and bathing accommodations. September 27, at twenty-six hours' notice, the hospital received its first batch of wounded, 130 in number, from Mons and Soissons. They landed at Southampton and went by train to Paignton, where they were transferred without a hitch, in good spirits. Most of them had not had their clothes off for two or three weeks, and had had little food, some having lain wounded in the trenches for two or three days. The cases were naturally septic for the most part, but being nearly all shrapnel wounds discharged freely from an open surface. A second batch of twenty-nine cases, mostly convalescents from Davenport, was

received October 5, and a further batch of 121 October 6. The rapid recoveries made under rest, good food and skilful care is indicated by the fact that of the first 159 cases, seventy had been discharged by October 6. The executive staff of the hospital consists of Lady Arthur Paget, Mrs. John Astor, the Duchess of Marlborough, Walter Burns, Esq., Lady Randolph Churchill, Mrs. William Eustis, Mrs. Walter Burns, Lady Henry, Mrs. Hoover and Mrs. Owen.

Casualties

In no previous war have the medical casualties been so heavy. So far as I have been able to keep track, at the time of writing, and taking army and navy together, there are killed 16, wounded 18, prisoners 46, missing 14. The large number of prisoners is partly accounted for by the rear guard action of the period between the retreat from Mons and the time at which the allies assumed the offensive. Naturally in the retreat many wounded and medical officers in charge had to be left behind, and thus became prisoners.

PARIS LETTER

Paris, Oct. 29, 1914.

The Death of Dr. Emile Reymond

Dr. Emile Reymond, senator of the department of the Loire, has just met a heroic death. He was wounded while reconnoitering in an aeroplane above the German lines. He kept his head in spite of cruel suffering and, continuing to steer his machine, brought it down between the German and French lines. While being removed in the ambulance, the intrepid aviator was able to report with precision the result of the mission that he had accomplished. The commanding general gave him the cross of the Legion of Honor at his bedside.

Emile Reymond was born at Tarbes, April 9, 1865. He was the son of the great engineer, Francisque Reymond, who was director of the Ecole centrale. Emile Reymond was a laureate of the Académie des sciences, of the Faculté de médecine and of the Assistance publique. He published important surgical works, and had already acquired a reputation as a practitioner when, at the death of his father, he was elected senator. Reymond early perceived the possibility of the great development of aviation and became its ardent advocate before the senate. Aug. 29, 1910, he passed brilliantly his examination for pilot and afterward accomplished numerous flights across France, even making his electoral campaign in an aeroplane. The same year he was placed at the head of the national committee of aviation and used his greatest efforts to have the aviation branch of our army provided with 700 aeroplanes. Dr. Reymond believed that the aeroplane might be of great utility for the health service as a means of facilitating the search for the wounded on the battle-field after action and perhaps even afford rapid transportation to the ambulances.

At the time of the declaration of war, Dr. Reymond, who was a major of the first class in the military health service, insisted on being transferred to the corps of aviators and sent to the firing-line. He left with a squadron of the army of the east and his courageous conduct earned him mention in the order of the day.

The Treatment of Wounds Received in Battle

In one of the last sessions of the Société de chirurgie de Paris, several papers on this subject were read.

Dr. Paul Riche, surgeon of the hospitals of Paris, believes that it is necessary to distinguish carefully between bullet wounds, which are the only aseptic ones, and wounds from shrapnel and shell. In the case of the latter, abstention from operation must not be confused with conservation. The aim should always be conservative, but it is necessary also to operate freely and early, and when there is a gaseous septicemia to operate if the traumatic lesions compromise the future function of the member or if they do not, to make deep incisions beyond the zone infiltrated with gas. The latter point is essential.

Dr. Rochard, surgeon of the hospitals of Paris, while agreeing with Dr. Riche, emphasized the good results he has obtained with a relatively strong solution of phenol. Dr. Henri Toussaint, military physician, emphasized the advantages of early and preventive incision of wounds even in treatment at the front for wounds made by shrapnel or fragments of shell. When once a sufficient channel of exit has been opened to the products of infection, it is necessary to refrain absolutely from attempting to close the wound either by suture or by clip. Toussaint has observed two cases in which clips appear to have caused phlegmonous complications which improved after the removal of the clips and drainage of the wounds.

As for puncture, Dr. Picqué believes that it is necessary to distinguish between septic and aseptic wounds, of which the first only should be incised.

The Transportation of the Wounded

Since the beginning of the war, the government has been trying to improve the transportation of the wounded and has taken up with the railway companies the creation of sanitary trains. The companies have organized a certain number of sanitary trains, composed in part of freight-cars, arranged to permit the transportation of the wounded on litters and in part of cars arranged for the wounded who were able to travel seated. Nine wounded men may be transported in a freight car and forty may travel in a car arranged for those who can travel seated. Altogether these trains can transport 70,000 wounded. The minister of public health is, moreover, studying at present, means of using boats and of removing soldiers from the field of battle by canals, rivers and smaller streams. Forty-four wounded men, with all the medical staff and supplies needed, may be transported on a boat. While transportation by water is slow, it is accomplished without shock, and under such conditions that the wounded may be treated as if in a hospital.

Aid for Belgian Students

At its last session, the council of the Université de Paris unanimously resolved that Belgian students who before the war had been matriculated in one of the universities of their own country might become matriculated in the schools of the Université de Paris without having to pay the matriculation, inscription and library fees. Young Belgians from the Belgian establishments of secondary education will likewise be received if they fulfil the conditions exacted by the Belgian universities. In default of diplomas and certificates, the young people may prove their qualifications by such means as are possible, for instance, certificates of French or Belgian diplomatic or consular agents.

Localities Without Physicians and Physicians Without Patients

Many communes in the vicinity of Paris and in the departments have been left without physicians by the mobilization. Also the invasion of the north and northeast of France has driven out a certain number of physicians who are deprived of all resources and all patients. The Société médicale des hôpitaux de Paris has therefore requested of the dean of the Faculté de médecine to constitute himself a receiving center for the requests from communes for physicians and for the applications of physicians without practice.

Marriages

Frederick Elmer Munch, M.D., Chicago, to Miss Alma B. Kundert of Racine, Wis., at Martintown, Wis., October 28.

Frank S. Muel Child, Jr., M.D., to Miss Helen Horton Bayles, both of Port Jefferson, L. I., N. Y., October 22.

Victor Eugene Kaufman, M.D., Canton, Ohio, to Miss Ella Lucille Moody of Carrollton, Ohio, October 20.

Frank Joseph Sykora, M.D., Brainerd, Minn., to Miss Adelaide Stoll of Little Falls, Minn., October 27.

Frank Burton Stephenson, M.D., Indiana, Pa., to Miss Elizabeth H. Wood of Philadelphia, October 28.

Howard Albert Hamilton, M.D., Drynob, Mo., to Miss Lois Brown of Springfield, Mo., October 11.

Hugh Owen Williams, M.D., Balaton, Minn., to Miss Ada E. Chrysler of Granville, Ohio, October 15.

John Graham Davis, M.D., Lincoln, Neb., to Miss Lenore Barber of West Pittston, Pa., October 22.

Karl Brooks Sturgis, M.D., Augusta, Me., to Miss Alice W. Fiske of Rockland, Me., October 28.

Firmadge King Nichols, M.D., to Miss Helen Marienne Spangler, both of Baltimore, October 24.

Morris Braude, M.D., Chicago, to Miss Dorothy Rosenstein of Mishawaka, Ind., recently.

William Frederick Becker, M.D., to Mrs. Becker, both of Chicago, October 27.

Deaths

Joseph Scribner Gibb, M.D. University of Pennsylvania, Philadelphia, 1880; a Fellow of the American Medical Association and College of Physicians of Philadelphia; from 1882 to 1892 outdoor physician to the Philadelphia Department of Charities and Corrections, and surgeon to the police department; from 1881 to 1884 in charge of the nose, throat and ear department of the Northern Dispensary; since 1893 professor and emeritus professor of diseases of the throat and nose of the Philadelphia Polyclinic; laryngologist to the Episcopal Hospital; who was seized with a cerebral hemorrhage at the Overbrook Golf Club, November 6; died at his home in Philadelphia, November 7, aged 55.

James Bartlett Brewster, M.D. Bellevue Hospital Medical College, 1866; a member of the Massachusetts Medical Society and formerly state medical examiner; surgeon of the Forty-Fourth Massachusetts Volunteer Infantry and assistant surgeon of the Second Division, Ninth Army Corps, during the Civil War, and surgeon-general of the Department of Massachusetts of the Grand Army of the Republic; at one time acting assistant surgeon in the United States Public Health and Marine Hospital Service; died at his home in Phillips, Mass., November 7, aged 73.

Osmon Beverly Campbell, M.D. Northwestern Medical College, St. Joseph, Mo., 1881; Jefferson Medical College, 1884; a Fellow of the American Medical Association; formerly president of the Tri-State Medical Society of Iowa, Illinois and Missouri; Western Gynecological and Surgical Association and Medical Society of the Missouri Valley; widely known as a surgeon of St. Joseph, Mo.; dean of the Central Medical College and professor of gynecology and abdominal surgery; died in his home in St. Joseph, November 11, after an illness of two years, aged 54.

George Livingston Peabody, M.D. College of Physicians and Surgeons in the City of New York, 1873; later professor of materia medica and therapeutics in his Alma Mater and from 1884 to 1887 a trustee and member of the council of Columbia University; formerly attending physician to New York Hospital, and consulting physician to the Roosevelt Hospital, New York City; died at his home in Newport, R. I., October 30, from heart disease, aged 64.

George Stanley Lynde, M.D. College of Physicians and Surgeons in the City of New York, 1866; a member of the Medical Society of the State of New York, New York Academy of Medicine and New York Pathological Society; for more than twenty-five years a member of the New York Board of Health and from 1907 to 1912 chief diagnostician of the board; died in the New York Hospital, November 5, after a surgical operation, aged 53.

Walter D. Green, M.D. University of Pennsylvania, Philadelphia, 1886; resident physician at the Presbyterian and Pennsylvania hospitals until 1892; then for two years medical inspector of the Philadelphia Bureau of Health, and in 1894 port physician of Philadelphia; aged 53; while a patient at a sanatorium in Bellemeda, N. J., October 25, wandered to the tracks of the Philadelphia and Reading Railroad and was struck and killed by a train.

Sarah R. Munro, M.D. Woman's Medical College of Pennsylvania, Philadelphia, 1872; a member of the Wisconsin State Medical Society; for many years a practitioner of Milwaukee; visiting physician to the House of Mercy and a director of the House and Home Farm School for Boys at Dousman, Wis.; died at her home in Milwaukee, November 3, aged 74.

Herman Reeve Ainsworth, M.D. New York University, New York City, 1866; a member of the Medical Society of the State of New York and its vice-president from 1905 to 1907; president of the Steuben County Medical Society in 1874; a member of the American Association for the Advancement of Science; died at his home in Addison, N. Y., September 3, aged 73.

Henry Northam Bryan, M.D. Jefferson Medical College, 1884; Medico-Chirurgical College of Philadelphia, 1895; a Fellow of the American Medical Association, and a member of the Medical Club of Philadelphia; for eleven years head of the surgical staff of the Medico-Chirurgical Hospital; died at his home in Philadelphia, November 2, aged 61.

John Ernest Gould, M.D. Western Pennsylvania Medical College, Pittsburgh, 1895; a member of the Medical Society of the State of Pennsylvania; died at his home in Pittsburgh, October 28, aged 44.

Albert Gallatin Jones, M.D. St. Louis Medical College, 1855; Chicago Medical College, 1860; for twenty-five years a practitioner of Milton, Ill., since that time a farmer near Kingston, Mo., and for the last four years a resident of Hamilton, Mo., and president of the Farmers' and Merchants' Bank in that city; died at his home, August 10, from arteriosclerosis, aged 81.

James Taylor Woodburn, M.D. Louisville (Ky.) Medical College, 1876; a member of the Kentucky State Medical Association; for twenty years a member of the board of health of Muhlenberg County, Ky.; and from 1910 to 1914 mayor of Central City, Ky.; died at his home in Central City, November 2, from nephritis, aged 64.

Ira F. Hart, M.D. Jefferson Medical College, 1852; formerly a member of the American Medical Association; a surgeon of Volunteers throughout the Civil War; editor of the *Saturday Evening Review* and of the *Elmira Advertiser* for many years; died at his home in Elmira, N. Y., October 30, from senile debility, aged 84.

Leo O. Egginton, M.D. Western Pennsylvania Medical College, Pittsburgh, 1907; formerly pathologist to the Independence (Iowa) State Hospital; died at his home in Juneau, Alaska, October 21, from appendicitis, aged 32.

James Jerome Hassett, M.D. Rush Medical College, Chicago, 1890; a member of the Illinois State Medical Society and of the Illinois State Board of Health; died at his home in McLeansboro, Ill., October 28.

Amos Jesse Newell, M.D. Rush Medical College, 1892; formerly a member of the American Medical Association; of West Pullman, Chicago; died in the Meadville, Pa., City Hospital, about October 21, aged 59.

Malcolm Duane Lewis, M.D. University of Missouri, Columbia, 1875; a member of the Missouri State Medical Association; died in his office in Columbia, Mo., October 22, from cerebral hemorrhage, aged 68.

James W. Money, M.D. University of Louisville, Ky., 1874; a pioneer practitioner of Central Kansas; died at his home in Herington, Kan., about October 14, from cerebral hemorrhage, aged 65.

William Ivan Senkler, M.D. University of Toronto, Ont., 1891; L.R.C.P. and L.R.C.S. Edinburgh and L.F.P.S. Glasgow, 1892; died at his home in Vancouver, B. C., July 29, aged 46.

William Henry Downey, M.D. Harvard Medical School, Boston, 1898; a member of the Massachusetts Medical Society; died at his home in Taunton, Mass., October 1, aged 49.

Blythe Jackson Callantine, M.D. Rush Medical College, 1913; after his graduation an intern in St. Luke's Hospital, Chicago; died at his home in Clifton, Ariz., October 28, aged 29.

Ely Bradley, M.D. University of Pennsylvania, Philadelphia, 1857; a member of the Medical Association of the State of Alabama; died recently at his home in Belleville, Ala., aged 78.

J. Franklin Barnes, M.D. Bellevue Hospital Medical College, 1875; a member of the Schuyler County (N. Y.) Medical Society; died at his home in Watkins, N. Y., about October 29.

Edward F. Gifford, M.D. Cleveland Medical College, 1893; of Erie, Pa.; died in the Hamot Hospital in that city, October 23, from septicemia due to an operation wound, aged 48.

Joseph Foster Dorsey, M.D. Starling Medical College, Columbus, Ohio, 1870; died at his home in Dresden, Ohio, October 22, from cerebral hemorrhage, aged 79.

William Garrett Stone, M.D. Vanderbilt University, Nashville, Tenn., 1879; formerly of Columbus, Ohio; died at Greenwood, Miss., about October 15, aged 59.

Adam Lindsey Wright Webb, M.D. University of Toronto, Ont., 1903; of Brighton, Ont.; died September 11, from accidental poisoning by toadstools, aged 35.

Daniel J. Reeder, M.D. Georgia College of Eclectic Medicine and Surgery, Atlanta, Ga., 1882; died at his home in Atlanta, October 24, aged 58.

Archibald C. Leslie, M.D. McGill University, Montreal 1890; of Kathryn, N. Dak.; died at McVille, N. Dak., about October 23, aged 54.

James Weir Renwick, M.D. University of Toronto, Ont., 1875; died at his home in Courtland, Ont., July 3, aged 67.

John L. Fitzporter, M.D. Washington University, St. Louis, 1871; died at his home in St. Louis, October 23.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

ARTICLES REFUSED RECOGNITION

(*Continued from page 1778*)

Reports of the Council on Pharmacy and Chemistry

[The abstracts that follow deal with articles which, having been refused recognition, were not deemed of sufficient importance to require lengthy reports. A previous instalment of abstracts appeared in THE JOURNAL, Nov. 14, 1914.]

Lysoform and Lysoform Crude

Lysoform, made by the Lysoform Gesellschaft, Berlin, Germany, according to the information submitted, is a watery solution of potash-soap containing 6-7 per cent. of formaldehyde. Crude Lysoform is said to contain 10 per cent. of formaldehyde and to be made from cheaper oils, such as linseed oil.

Examination showed that the name "Lysoform" was blown in the glass and that a circular was wrapped around the trade package which recommended its use in conditions such as the following: "bites," "furunculosis," "softening abscesses," "insect-bites," "chronic and acute catarrhs" and "catarrh in the throat." The name was blown in the glass of the sample package of Crude Lysoform and the following claims appeared on the label:

"Eingeführt in den Heilstätten zur Bekämpfung der Tuberkulose."[1]

"Bestes Mittel zur Verhinderung und Beseitigung von Tierseuchen aller Art bei Pferden, Rindvieh, Schweinen, Schafen, Katzen, Hunden u. Geflügel."[2]

The referee recommended that these objections, constituting conflicts with the rules of the Council, be brought to the attention of the Lysoform Gesellschaft, and also that evidence be requested for the assertion made that soap is efficient as a means of removing the local effects of formaldehyde, and for Lysoform's asserted "thorough efficiency as a powerful disinfectant." The referee pointed out that the papers of Pfuhl (*Hygienic Review*, 1902-3), Symanski (*Jour. Hyg. and Infect. Dis.*, 1901-3) and Seydewitz (*Centralbl. f. Bacteriol.*, 1902-3) used in the advertising circular for Lysoform really show that Lysoform possesses only a moderate germicidal action and that the claim that Lysoform is a powerful disinfectant is misleading, especially in view of the work of Seydewitz (1902) who states that it requires a longer time of action than other disinfecting agents.

The referee's report having been adopted by the Council it was sent to the manufacturer Dec. 19, 1913. No action having been taken to remove the reported conflicts with the rules or to present evidence to substantiate the claims made, the Council voted that Lysoform and Crude Lysoform be refused recognition.

Phecolates, Phecolax, Phecozymes and Phecotones

Phecolates, Phecolax, Phecozymes and Phecotones were submitted by F. Waldo Whitney, New York, with "literature" indicating that they are designed to form parts of a system of treatment founded on the theory of autotoxemia, which they are supposed to prevent by their action on the functions of the intestinal canal. The different preparations consist in the main of mixtures of well-known remedies. The basic preparation is Phecolates, which contains bile salts in combination with phenyl salicylates and benzo-naphthol in about one-eighth the regular doses and hence not likely to be of any real service. Since the proportions of these ingredients ought to be regulated by the physician according to the needs of the individual patient, they should not be combined in fixed proportions. The name is not so framed as to indicate the principal ingredients.

Phecolax contains, in addition to the ingredients of Phecolates, phenolphthalein and cascarin, of each one-half grain.

Phecozyme is made more complex than Phecolax by the introduction of additional phenyl salicylate and of pancreatin.

Phecotone contains ten ingredients.

Extravagant claims such as the following are made:

"Our Health is governed by our bowels; Our bowels are governed by our nerves; Our nerves are governed by our digestion; our digestion is governed by Phecolates."

The Council voted to refuse recognition to Phecolates, Phecolax, Phecozymes and Phecotones as unscientific articles with objectionable names.

Serum Vaccine, Bruschettini

The Serum Vaccine, Bruschettini, sold by R. G. Berlingieri, New York, has for its aim the destruction of the tuberculous cell and the facilitation of its elimination by the natural expulsion process, it being held that this constitutes a victory in the struggle against consumption as much as obtaining the death and elimination of the specific bacillus. The description for the preparation of this "Serum Vaccine" is complicated and makes the impression that it is based on a number of unproved hypotheses.

After an examination of the evidence submitted the Committee on Serums and Vaccines recommended to the Council that further consideration be postponed until the manufacturer submit proof of the value of the preparation. The Council having agreed to the recommendation, this action was communicated to the American agent for Serum Vaccine, Bruschettini, June 14, 1913. After waiting nearly a year for evidence to substantiate the claims made for the product the Council voted that Serum Vaccine, Bruschettini, be refused recognition. This action having been communicated to the manufacturer, the information was received September, 1914, that the Serum Vaccine is now used only in slight cases.

Sherman's Non-Virulent Tubercle Vaccine

Consideration of this product of G. H. Sherman, Detroit, having been requested, the Committee on Serums and Vaccines examined the information and advertising matter submitted. It then recommended that in view of the far-reaching claims made for this preparation, for example, that "comparatively small doses of the killed organism will produce a marked immunizing response to the virulent human tubercle bacillus," that consideration be postponed, and the manufacturer be requested to submit evidence—reports of animal experimentation and case reports—to substantiate his claims. After waiting more than six months for the required evidence, the Council voted that Sherman's Non-Virulent Tubercle Vaccine be refused recognition.

White Sulphur Salts

White Sulphur Salts, put on the market by the White Sulphur Springs, Inc., White Sulphur Springs, W. Va., is said to be an effervescing salt containing sodium phosphate, magnesium sulphate, sodium sulphate, and sodium citrate with an effervescing base consisting of sodium bicarbonate, citric and tartaric acids and saccharin. It is claimed that one teaspoonful of the mixture represents "the approximate equivalent of one glass of the White Sulphur Spring Water." Comparison showed that the composition of White Sulphur Salts as claimed did not agree with the submitted analysis of White Sulphur Spring Water, the spring water containing calcium, strontium, iron, manganese, lithium, silica and alumina, which were not present in the artificial salts. Further, one teaspoonful of the manufactured sulphur salts to a glass of water would contain from 50 to 75 grains of the several salts, whereas the White Sulphur Spring Water would contain approximately 8 grains of the several salts. White Sulphur Salts being neither an artificial form nor an approximate equivalent of White Sulphur Spring Water, the Council held it not eligible for inclusion with N. N. R. or the appendix.

Unguentum Selenio Vanadic (v. Roemer)

Unguentum Selenio Vanadic (v. Roemer) is an ointment manufactured by A. von Roemer, Brooklyn, N. Y., and put on the market by Schering and Glatz, New York. It is claimed to contain 1 per cent. of selenium oxycyanid and 1 per cent. of vanadium chlorid "so prepared and incorporated into a modified lanolin base as to insure complete absorption." The preparation is recommended in the later stages of inoperable carcinoma, sarcoma, epithelioma and other malignant tumors, as a substitute for morphin and other narcotics to control pain, as a modifying (ante-operative) treatment in the middle stage of malignant cases presenting the characteristics of being inoperable, and as a prophylactic treatment of recurrences and metastases following excision of malignant tumors. It is also recommended for use in slow-healing surgical wounds, abscesses, tuberculous and mixed septic and gan-

1. Introduced into sanatoriums for the treatment of tuberculosis.
2. Best means for the prevention and suppression of epidemics among horses, cattle, swine, sheep, cats, dogs and poultry.

grenous processes, etc., in lupus, acne, eczema, psoriasis, scabies, erythemata, adenomata, angiomata, papillomata, etc. The use of the ointment is further recommended by systemic inunction in septicemia, pneumonia, erysipelas, cerebrospinal meningitis, septic rheumatism, septic neuritis, etc. The Council voted that the preparation be not accepted for inclusion with New and Nonofficial Remedies because no evidence has been submitted that the vanadium and selenium are absorbed or that they produce any of the effects claimed.

When the preceding report was sent to Schering and Glatz, the firm expressed surprise that evidence of the absorption of selenium and vanadium should be requested. On June 8 the firm wrote that within a few days one or more tests would be sent by which the presence of selenium and vanadium in the urine could be demonstrated. These tests were not received. So far (November, 1914) no evidence of the value of the preparation either in carcinoma or in any of the very long list of other diseases in which it is recommended has been submitted, and, the pharmacologic evidence that such a preparation would be of value in such conditions being practically nil, the Council authorized publication of this report.

(To be continued)

IODIA

Report of the Council on Pharmacy and Chemistry

The following report on Iodia was adopted by the Council and its publication authorized.

W. A. PUCKNER, Secretary.

Iodia is put on the market by Battle and Company, under the claim that it contains potassium iodid in combination with iron phosphate and vegetable "principles." It is extravagantly recommended for use in many and varied conditions. For instance, it is "an unexcelled altero-reconstructive," "almost a specific" in eczema and rheumatism and "a highly efficient form of iodin," which will not produce iodism!

The therapeutic effects of iodids result from a chemical transformation by which molecular iodin is set free in the tissues, thus producing a mild degree of iodism. It follows, then, that a preparation which cannot give rise to the symptoms of iodism cannot be expected to produce the therapeutic effects of the iodids. The claim that Iodia is therapeutically efficient without producing iodism therefore justifies suspicion, to put it mildly.

In view of the exaggerated tone of the advertising, together with the fact that a report from the Chemical Laboratory of the American Medical Association showed marked discrepancies between the formula and the composition of Iodia, it seemed desirable to investigate this product. The report of the laboratory, which is given below, shows conflict with Rule 1 (secrecy of composition) and with Rule 2 (false claims of standardization). A discussion of the claims made for Iodia follows the report.

LABORATORY REPORT

The composition of Iodia is given thus:

"Formula.—Iodia is a combination of active principles obtained from the green roots of Stillingia, Helonias, Saxifraga, Menispermum and aromatics. Each fluid drachm also contains two and one-half grains Iod.-Potas. and one and one-half grains Phos.-Iron."

We are told that:

"Its several ingredients are selected with scrupulous care, and the most exacting methods are constantly employed to insure absolute uniformity and maximum therapeutic potency."

This "formula" is an absurdity: First, the amounts of the "active principles" of the plants named are not given; second, these "principles," with the possible exception of menispermum alkaloids, have not been isolated; and, third, ferric phosphate and potassium iodid are incompatible! Incidentally, there are no methods whereby it is possible to secure "absolute uniformity" of a mixture such as Iodia is claimed to be.

Qualitative tests demonstrated the absence of iron and the absence of all but traces of phosphorus compounds (0.015 gm. phosphorus per 100 c.c.). Minute traces of alkaloids, possibly from menispermum, were found (that amount being about 0.004 gm. per hundred c.c. of the preparation). Therapeutically this quantity is entirely negligible. Determinations of iodid demonstrated the presence of only about 60 per cent. of the amount of potassium iodid claimed. The "formula" for Iodia is false and misleading.[1]

DANGEROUS RECOMMENDATIONS

One of the Iodia labels reads:

"INDICATIONS.—Syphilitic, scrofulous and cutaneous diseases, dysmenorrhea, menorrhagia, leucorrhea, amenorrhea, impaired vitality, habitual abortion and general uterine debility."

Such recommendations are likely to lead to self-drugging in conditions that are not only dangerous to the individual but also a menace to the community. The preparation thus conflicts with Rule 4 of the Council. After admitting the need of efficient iodid medication in certain stages of syphilis and after exaggerating the frequence and severity of symptoms of iodism, an advertising circular entitled "Practical Therapeutics" asserts:

"Iodia then is the preparation of iodid of potassium to be preferred whenever it requires to be administered in large doses or for prolonged periods of time . . .

"Not only does the association of the iodid of potassium with the vegetable alteratives offer a measure of protection against iodism but the latter exert depurative effects on their own account . . ."

It is generally accepted that in certain stages of syphilis the only hope of success lies in efficient iodin medication. The exploiters of Iodia state that a dose of the nostrum contains 2½ grains of potassium iodid; actually it contains only 1½ grains. To urge physicians and the public to depend on this product for efficient iodid medication constitutes an unwarranted therapeutic exaggeration (Rule 6) which approaches criminality. The reason Iodia does not produce iodism is that, in the doses recommended, the iodin action is extremely feeble.

Likening the human body to a factory and discussing the "break downs" which are likely to occur, a circular entitled "Always Trustworthy" says:

"When administered in proper dosage, Iodia stimulates organic functions, promotes the elimination of waste products, and re-establishes metabolic activity. It increases the solvent properties of the blood, and arrests abnormal tissue metamorphosis. In other words, it lends material assistance to weakened cells and curbs those unduly active. Iodia, obviously, has a wide range of indications. It has been most generally and successfully employed, however, in Syphilitic, Scrofulous and Cutaneous Diseases, Rheumatic and Gouty Ailments, Dysmenorrhea, Menorrhagia, Leucorrhea, Amenorrhea, Impaired Vitality, Habitual Abortion and General Uterine Debility, and wherever a reliable altero-reconstructive is required."

These recommendations show that in addition to the objections already given, this nostrum is an unscientific shotgun mixture. This brings it in conflict with Rule 10 (unscientific articles inimical to the medical profession and the public).

It is recommended that Iodia be refused recognition.

Correspondence

Priority in Discovery of Drainage Apparatus

To the Editor:—In THE JOURNAL, Nov. 7, 1914, p. 1667, I observe an article by Dr. Lucian W. Smith of Lafayette, Ind., on "Suprapubic Prostatectomy with Special Reference to Drainage."

As to the drainage apparatus which is the point of the article: A reference to the *Annals of Surgery* for April, 1896, also for October, 1899, will show the same thing described in full as my invention. Or rather, I credited the principle—though far less simply carried out—to Dr. Snow, a dentist of Buffalo, who first employed it many years earlier; and ever since then dentists everywhere have made use of it to empty of saliva the sublingual space during dental operations.

In the *Annals* articles quoted my device will be found also employed for estimating the amount of urine passed and for washing out the bladder.

1. It should be noted that the discrepancies here reported between the actual and the claimed composition of Iodia were pointed out more than thirty years ago by A. B. Lyons (Detroit *Lancet*, October, 1883, vi, 157-8), who found that Iodia was deficient in iodid content and practically free from iron.

To quote from only one author, where if desired several could be cited, on page 416 of Dr. G. E. Brewer's work on surgery the same device is illustrated for his article on suprapubic cystotomy, and is credited to me.

I have no doubt that Dr. Smith thought of this quite independently, and is simply unfortunate in that another writer happened to be born earlier. Indeed, so simple and at the same time practical and efficient is this mode of draining any cavity from its top instead of its bottom that the wonder is that this idea is not reborn yearly!

Let me remark, in conclusion, that I make the necessary loop in the exit tube from the reservoir by tying a simple knot in this tube. This makes it self-retaining. And the smaller the loop and the nearer down toward the floor it is placed, the better does the apparatus work. The Y-connection entering from the tube to the bladder should join as closely above the loop aforesaid as it conveniently can.

A valve at the lower end of the exit tube is not necessary. Any little weight, such as a door-key or a pebble fastened to the tube-end, holding it under water, is alone needed.

Robert H. M. Dawbarn, M.D., New York.

Alphonso Corti Correspondence

To the Editor:—Apropos of your interesting account of Marquis Alphonso Corti (The Journal, Nov. 7, 1914, p. 1676), I enclose a letter on file in the correspondence of the late Prof. Joseph Leidy which may interest your readers. Some years ago on a visit to Milan and Turin I got in touch with members of his family now living in Milan. I had hoped to obtain Professor Leidy's replies to the Corti correspondence. Though I understand some of his correspondence was preserved, there was unfortunately nothing of scientific interest.

Joseph Leidy, M.D., Philadelphia.

Turin, August 1, 1852.

My Dear Sir:—Having seen from your interesting observations on the microscopic structure of cartilage that you occupy yourself with microscopic anatomy—I am not aware of any one else doing so in America, I avail myself of the very kind offer of Mrs. White, returning home from here, to send you a copy of the first part of my research on the organ of hearing of mammalia. I was obliged to make my studies principally on domestic animals because it is very difficult in Europe to obtain wild animals, which will be easier for you in America. As you will see that my discoveries on that subject are not without interest to physiology—I wish I might induce you to repeat my observations and extend them over a larger number of wild animals.

I should be very happy to keep up a scientific correspondence with you on physiology and microscopic anatomy. I am at the beginning of my scientific career, and I will direct all my endeavors to the physiological anatomy of animals.

My already long letter will perhaps have annoyed you. Excuse me for it; but science and more than any other the study of nature brings men near to each other and will probably later bring me on a visit to your native country, the most wonderful both for its political institutions and for its natural productions.

You will greatly oblige me with an answer [and], believe me, My dear sir,

Your obedient servant,

Alphonso Corti,
at Turin, Kingdom of Sardinia.

I enclose two short German articles of mine and two Italian ones of my friend Dr. d. Filippi, Professor of Zoology and Director of the Zool. Mus. here.

To Dr. Joseph Leidy,
Philadelphia Academy of Sciences.

The Neglect of Vital Statistics.—If the unborn historian of hygiene in the twentieth century shall find one anomaly more curious than any other, it will be that the twentieth century, opening with prodigious resources immediately available, ran a third or half its course before these resources became so standardized that each unit of power might be accounted for in a definite scheme of vital statistics.—J. S. Fulton.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

SEWER AND WATER PIPES IN THE SAME TRENCH

To the Editor:—In a town where it is exceedingly expensive to dig ditches owing to the rocky formation, would it be advisable or objectionable to lay the sewer pipe and the water pipe in the same ditch?

Charles W. Sult, M.D., Flagstaff, Ariz.

Answer.—The proximity of sewer pipes and water pipes is not altogether free from objection, but if the water pressure is constant and the sewer pipe is laid with tight joints there will probably be little risk under ordinary conditions. Careful construction should obviously be insisted on to reduce so far as possible the likelihood of an "accident."

ARTICLES ON ABDERHALDEN'S METHOD

To the Editor:—Can you refer me to any articles treating of the diagnosis of disease by means of Abderhalden's serum reaction?

J. D. Blything, M.D., Bettendorf, Iowa.

Answer.—A list of articles on the serodiagnosis of pregnancy was published in The Journal, Oct. 12, 1912. In the issue of September 6, p. 788, the technic was described and a full list of references was given; Dec. 6, 1913, p. 2087, a list of references to articles appears; and May 16, 1914, p. 1576, a list of references to the use of the test in psychiatry, together with a description of the technic, was published.

CEDAR POISONING—SOFTENING HARD WATER

To the Editor:—1. Lumber mill men frequently consult me for "cedar poisoning" on their hands. Is there such an ailment? If so, please give etiology, treatment and differential diagnosis from eczema and syphilis. I was of the impression that oil of cedar was soothing and mildly antiseptic.

2. Give a method of rendering hard water soft other than by boiling. This question was asked in a medical examination. The inhabitants of Kansas let the water freeze and then melt the ice. The result is soft water. Will you please explain why this is true? L. H.

Answer.—1. There are a large number of substances which produce irritation of the skin known as dermatitis venenata. The lists of these substances given in the works on dermatology are not complete but they do not include cedar. The diagnosis of such an affection would be most easily made by noting the recovery on removal of the supposed cause and the recurrence on renewed exposure. The diagnosis of eczema would be made by comparing the characters of that disease, which would probably persist after the cedar oil was removed.

2. Hard water can be softened by mixing it with a definite quantity of milk of lime which converts the carbonic acid into calcium carbonate and causes the precipitation of the calcium carbonate originally present in the water. When water freezes, the salts present in it are left behind so that the ice is very nearly pure water.

NARCOPHIN

To the Editor:—Can you give me any data concerning Narcophin advised by Prof. Krönig as an anesthetic in obstetrics? I understand it is a proprietary double salt of morphin and narcotin but have no record of its percentage composition.

C. E. Dakin, M.D., Mason City, Iowa.

Answer.—The manufacturers state that Narcophin is a double salt consisting of morphin meconate and narcotin meconate in molecular proportions, containing about 30 per cent. of morphin alkaloid. They claim that it is a scientific substitute for opium and that it has advantages over morphin; specifically that it is much less liable to produce respiratory disturbance or nausea. Examination made in the A. M. A. Chemical Laboratory essentially verified the claims made in regard to the composition of Narcophin (*Reports of the A. M. A. Chemical Laboratory*, 1913, vi, 92). The Council on Pharmacy and Chemistry, however, was unable to accept the therapeutic claims made for the preparation and voted not to accept it for inclusion in New and Non-official Remedies.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ALABAMA: Montgomery, Jan. 5, 1915. Chairman, Dr. W. H. Sanders, Montgomery.

CALIFORNIA: Los Angeles, December 8. Sec., Dr. Charles B. Pinkham, 727 Butler Bldg., San Francisco.

DELAWARE: Dover and Wilmington, December 8-10. Sec., Dr. H. W. Briggs, 1026 Jackson St., Wilmington.

FLORIDA: Palatka, December 2-3. Sec., Dr. E. W. Warren, 102 Front St., Palatka.

KENTUCKY: Louisville, December 16-18. Sec., Dr. A. T. McCormack, Bowling Green.

MARYLAND: Baltimore, December 8. Sec., Dr. J. McP. Scott, 137 W. Washington St., Hagerstown. Homeopathic, Baltimore, December 15-16. Sec., Dr. O. N. Duvall, 1817 N. Fulton, Baltimore.

MISSOURI: St. Louis, December 14-16. Sec., Dr. J. A. B. Adcock, State House, Jefferson City.

NEW HAMPSHIRE: Concord, December 29-30. Regent, Mr. H. C. Morrison, Concord.

OHIO: Columbus, December 8-10. Sec., Dr. George H. Matson.

PENNSYLVANIA: Philadelphia, December 1-3. Sec., Dr. N. C. Schaeffer, Harrisburg.

VIRGINIA: Richmond, December 15-18. Sec., Dr. J. N. Barney, Fredericksburg.

Higher Preliminary Requirements in Louisiana

A letter from Dr. E. L. Leckert, secretary of the Louisiana State Board of Medical Examiners, states that at the meeting of that board held October 29, a resolution was adopted that all students matriculating on and after June 1, 1915, in addition to a standard four-year high-school education, must present evidence of the successful completion, at an approved college or university, of one full year of work in biology, physics, chemistry and a modern language. This will apply to all applicants seeking licenses in Louisiana who graduate in 1919 and thereafter. This is the twenty-third state which has adopted the requirement of one or more years of collegiate work as the minimum standard of preliminary education.

Delaware Regular and Homeopathic Report

Dr. H. W. Briggs, secretary of the Medical Council of Delaware, reports the written examination held at Dover and Wilmington, July 16-18, 1914. The total number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 11, all of whom passed. Three candidates were licensed through reciprocity. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Baltimore Medical College	(1913)	80.4, 83
University of Maryland	(1911)	82.4
New York Homeo. Med. Coll. and Flower Hosp.	(1913)	91.5
Hahnemann Medical College and Hosp., Philadelphia	(1914)	92.4
Jefferson Medical College	(1914)	84.1, 87.7
Medico-Chirurgical College of Philadelphia	(1914)	81.4, 81.5, 87.7
University of Pennsylvania	(1914)	87.1

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
George Washington University	(1906)	Maryland
Medico-Chirurgical College of Philadelphia	(1912)	Penna.
University of Pennsylvania	(1907)	New Jersey

Arkansas Eclectic May Report

Dr. C. E. Laws, secretary of the Arkansas Eclectic Medical Board, reports the oral and written examination held at Little Rock, May 12-13, 1914. The total number of subjects examined in was 12; total number of questions asked, 120; percentage required to pass, 75. The total number of candidates examined was 16, all of whom passed. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Georgia College of Eclectic Medicine and Surgery	(1914)	93.8
American Medical College	(1912)	82.2
Eclectic Medical University, Kansas City	(1901)	83.8; (1914) 75, 76.2, 77.7, 79.1, 80.2, 82, 84, 85, 86.6.
Eclectic Medical College, Cincinnati	(1870)	82.8; (1881) 87.2; (1906) 85; (1912) 83.

Book Notices

DIE ENTSTEHUNG UND BEHANDLUNG DER KARZINOME. Von Hofrat Dr. A. Theilhaber. Paper. Price, 8.20 marks. Pp., 182, with 17 illustrations. Berlin: S. Karger, 1914.

In the opening paragraph the author says that the statement commonly made that practically nothing is known concerning the cause of carcinoma is too pessimistic, and he declares that more is known to-day about the cause of carcinoma than is known about the cause of the majority of other diseases. He then takes up the causes of carcinoma under two headings: (1) local and (2) humoral. Under the first he mentions the usual headings: local irritation, chronic inflammation, trauma, scars, parasites (non-specific), etc., but brings out nothing new. Under the second are mentioned the influence of race and of social position, heredity, character of the food and of the soil, psychic excitement or depression, the structure and function of the internal organs, etc. After reading all the author has to say concerning the numerous causes of carcinoma one cannot fail to be impressed with the fact that the evidence in favor of each and all of them is insufficient. Under treatment considerable space is devoted to the use of the Roentgen ray. The author thinks, however, that the results are not very encouraging except in the cutaneous varieties. Concerning the use of the Roentgen rays after operation for the purpose of preventing a recurrence, the author says: "By intensive ray treatment the blood-forming organs are seriously damaged. The cells of the bone-marrow, the spleen, and the lymphatic tissues react strongly to the Roentgen and radium rays with nuclear destruction. On account of the great importance which the blood-forming organs possess when in good function as a prophylactic against carcinoma it is not probable that by the use of the rays alone the percentage of recurrences is materially reduced. Experience with Roentgen carcinoma has shown that by the too frequent use of the rays the disposition to carcinoma may be even increased." Much the same views are expressed about radium and radio-active substances. The author says: "A pronounced elective effect of radium on the carcinoma cells is not present. Simply the carcinoma cells are more sensitive and react sooner than the normal cells, but the normal tissues do not remain unharmed."

Attention is called to the fact that destructive changes may take place in the healthy tissues which at first are not apparent and that in a number of cases extensive sloughing of the bladder and rectal walls has taken place months after the use of radium in carcinoma of the uterus, and that in carcinoma of the rectum extensive strictures have occurred without the carcinoma being healed. According to the author radium has not given much better results than Roentgen rays as a rule, and in many cases the Roentgen rays are to be preferred. Other methods of treatment discussed are diathermia, fulguration, chemotherapy, the injection of tumor extracts, autotherapy, and the injection of organ extracts. The author thinks he has seen some benefit from the use of diathermia and the injection of organ extracts, and recommends this treatment as a routine after operation in order to prevent recurrence. The work is another evidence of the great effort that is being made at the present time to solve the problem of cancer.

THE LIFE AND LETTERS OF NATHAN SMITH, M.B., M.D. By Emily A. Smith. With an Introduction by William H. Welch, M.D., LL.D. Cloth. Price, $2.25. Pp., 185, with illustrations. New Haven: Yale University Press, 1914.

Nathan Smith was one of the makers of the history of medicine in New England. Not only this, but he was one of the most important characters in American medicine during the first three decades of the last century. Hence anything that contains facts regarding him or his work naturally must be of interest to medical men.

A good portion of this book is devoted to his letters to his pupil and friend, Dr. George C. Shattuck. These are especially interesting and enlightening, not only regarding Dr. Nathan Smith and his work, but also concerning conditions

that prevailed at the time. Dr. Shattuck seems to have been a useful friend, if we may judge from the correspondence: "I wish also," Dr. Smith writes from Hanover, Sept. 15, 1807, "that you would apply to Mr. Dunn or Mr. Maynard, whom you think best, and procure of them on my account several things, viz.: one dozen oil flasks and one pound each of the following: nitric acid, muriatic acid and sulphuric acid. . . . I wish also, that if they can be obtained in Boston, that you would procure for me some earthen and glass retorts." And this from another letter to Dr. Shattuck: "I am continually troubling you about many things. I wish now that you would be so kind as to procure for me two tin reflectors and a tin canister, which you will find described in Henry's Chemistry, in his chapter on Caloric. If you can find a tinman who will make them for you, and you will transmit them to me by Mr. Williams, or Mr. E. Woodward, it would oblige me very much. I shall soon be able to transmit to you the means of paying for these things." In another letter, we read: "If you have a man in Boston who makes thermometers," etc. These are samples from his letters to Dr. Shattuck and they show the "practical" friendship that existed between these two historic medical characters. But, more important, they give us a glimpse of Dr. Smith's scientific interests and activities.

Dr. Smith is best known in connection with his work in medical education. He was the founder of the medical school of Dartmouth College and for some time the whole faculty. When this college was well started he was called to the new medical school at Yale, as "professor of theory and practice of physics, surgery and obstetrics"—a position which he held until his death. Meanwhile, another medical school was started and secured his services. This was at Bowdoin, in the new state of Maine. He was professor of theory and practice of medicine of Bowdoin for five years. Here his lectures were delivered in the summer and did not conflict with his work at New Haven. The University of Vermont started its medical department, the leading spirit in this enterprise being Dr. N. R. Smith, son of Dr. Nathan Smith. "While still faithfully discharging his duties at Yale and at Bowdoin, Dr. Nathan Smith visited the Burlington School and not only delivered courses of lectures there, but by constant correspondence with his son gave it the benefit of his wisdom and experience, thus as the colleague of his son in the enterprise aiding in the establishment of a fourth medical school in New England."

While instrumental in starting four medical schools, he was not a believer in multiplicity, for he says in one of his Shattuck letters, "I think the four schools which I have been concerned in bringing forward, in addition to Howard, will be as much as New England will bear." And then farther on he adds—and if he were living to-day it is quite likely he would make the same statement—"Every state should have one medical school and no more."

Those who are interested in the medical history of the United States will find this book not only profitable reading, but full of some interesting historical data.

Recreations of a Physician. By A. Stuart M. Chisholm. Cloth. Price, $2. Pp. 328. New York: G. P. Putnam's Sons, 1914.

This book contains ten essays on various subjects. Five—"Banquo," "The Symbolism of Names," "Royal Authors," "On Some Translations of Horace," and "The Picaro in Fiction"—are literary and historical, rather than medical. They make not only interesting, but also instructive reading for any one who appreciates good things. The chapters of special interest to physicians are: "Specialization," "Physicians as Men of Letters," "The Inherited Spirit of Medicine," "Some Features of the Science of Medicine in the Seventeenth Century," and "On the Prevention of Disease." They are all full of information. The chapter on the prevention of disease is a historical account of the development of quarantine, and of inoculation and vaccination against small-pox; also an account of the plague visitations, of the origin and development of the science of bacteriology, of the discovery of the transmission of yellow fever, etc. This chapter alone is worth the price of the book. The one on physicians as men of letters is a revelation. It shows that medical men have influenced literature much more than most of us imagine, and that more noted men of letters were disciples of Æsculapius than is generally understood.

These essays reveal their author as a physician of wide reading, who has been industrious in his recreation. Each of the essays is well and interestingly written, and, more important, is instructive.

The American Encyclopedia and Dictionary of Ophthalmology. Edited by Casey A. Wood, M.D., C.M., D.C.L., Professor of Ophthalmology, College of Medicine, University of Illinois. Volume III. Cataract in Diabetes to Cocain Carbolate. Cloth. Price, $6. Chicago: Cleveland Press, 1914.

Chief topics in this volume are cataract, ocular relations of neighboring cavities and choked disk. Each of these important subjects is treated in a full and thorough manner, the first occupying 269 pages, giving an indication of the monumental character of the work. The pace set in former volumes is well kept, there being the usual defects and excellences of style and quality incident to varied authorship of the different articles. As a minor defect might be mentioned the use in legends of such expressions as "Author's irrigator," etc. It would be much better to give the irrigator the name of the author of the article, avoiding the necessity of looking up the author's initials at the end of the article and then referring to the authors' key in the beginning of the volume. To the editor and his collaborators are due congratulations on the rapid progress of the work.

Radium Therapeutics. By N. S. Finzi, M.B., M.R.C.S., L.R.C.P., Chief Assistant in the X-Ray Department, St. Bartholomew's Hospital. Cloth. Price, $2. Pp., 112, with 25 illustrations. New York: Oxford University Press, 1913.

The author's effort in this little book has been, he says, "to place before the profession a brief and clear account of the action and (therapeutic) uses of radium and its rays." And it may be said at once that he has succeeded well in this rather difficult and altogether laudable task. He has first written very clearly of the physics of radium and of the technic of its therapeutic application, and, best of all, has given an account of what is known from histologic study of its effects on tissues; so that he puts its therapeutics uses on a rational foundation. His summaries of its value in various diseases are brief but explicit; and he is blessed with experience and a fine conservatism, so that his judgment on its value is sane and not overenthusiastic. The book is an excellent one in a difficult field.

Manual of Surgery. By Alexis Thomson, Professor of Surgery, University of Edinburgh, and Alexander Miles, Surgeon Edinburgh Royal Infirmary. Cloth. Second Edition. Volume III—Operative Surgery. Price, $3.50. Pp., 620, with 255 illustrations. New York: Oxford University Press, 1913.

The convenient size, large print, the many good illustrations and a splendid text combine to make this book a welcome addition to the surgeon's library. It is written concisely but clearly, and the field is covered fairly well. The work of American surgeons receives the attention it deserves, although so well-known and popular an operation as the Andrews imbrication in connection with inguinal hernia is not mentioned. The usual division of the subjects treated is made. The closing chapter on anesthesia is good. It is short but gives much valuable information. Whether or not it should have a place in a book of this kind is open to question.

Infant-Feeding. By Clifford G. Grulee, A.M., M.D., Assistant Professor of Pediatrics at Rush Medical College. Second Edition. Cloth. Price, $3. Pp., 314, with 29 illustrations. Philadelphia: W. B. Saunders Company, 1914.

The author in revising his book has made no radical changes, but has endeavored to add the substance of the accumulated scientific data of the two years since the original publication. It is a good practical presentation of the theories and classification of Finkelstein, of Meyer, of Czerny and of Keller on the infant-feeding problem. Supplemented by observations from the author's own experience.

Miscellany

Oil of Chenopodium as a Substitute for Thymol in Hookworm Disease

Thymol, largely used in the treatment of hookworm, is one of the many drugs which has increased in price as a result of the present European war. In a recent article Motter (*Pub. Health Rep.*, Oct. 2, 1914, p. 2651) discusses the substitution for thymol of an American drug, oil of chenopodium. As indicated by its popular name, wormseed oil, this drug has long had a reputation as a vermifuge. The plant from which it is obtained grows in waste places practically all over the United States. The oil is produced chiefly in Maryland, and the seed comes to a considerable extent from Maryland and Florida. It is said that oils distilled by different processes and from seed grown in different localities vary in efficacy. The value of the drug in the treatment of roundworms is recognized, and Schüffner and Vervoort (*München. med. Wchnschr.*, 1913, lx, 129) found it superior to thymol, naphthol or eucalyptus oil in the treatment of hookworm. Oil of chenopodium paralyzes but does not kill the parasite, which must be removed by free purgation. Unlike aspidium and thymol, wormseed oil can be followed by castor oil, which does not increase the toxicity. Schüffner and Vervoort gave 16 drops of wormseed oil every two hours for three doses; two hours afterward, a tablespoonful of castor oil with a teaspoonful of chloroform. Gockel gives the single dose as 8 drops for patients 6 to 8 years; 10 drops, 9 to 10 years; 12 drops, 11 to 16 years; over 16 years, 12 to 16 drops. If inordinate sleepiness, depression or other untoward symptoms occur, the chenopodium must be stopped at once, active purgation induced, and stimulation by oral or rectal administration of strong hot coffee begun.

Medical Education of An Earlier Day

The *London Magazine*, a journal of note a century ago, in one of its issues during 1825 contains a somewhat satirical "dig" at the medical education of that period. One item reads:

"There are 3,500 medical practitioners in London, 900 in Paris, and not one in Jericho. If you ask aloud in the street in New York, How do you do, doctor? not fewer than nine passengers will answer you."

Concerning medical education in the British Isles, it says:

"We understand that there is a university called the University of Edinburgh, where ragged Scotch louts spend twenty or thirty pounds, and six months, in acquiring what is called medical knowledge. Others, richer and less ragged, spend three years, and twice as many hundred pounds; a few may occupy four or five. In Glasgow, they do pretty much the same. In both, they talk what is called Latin, and pay thirty pounds at the ends of these probations, have a velvet cap put on their heads, hear a speech from a man called a principal, and become M.D.—Doctors of Physic, or Medicine, for it is not absolutely agreed which (vide Term Reports, anno 1773. Boswell v. Johnson).—At Aberdeen again, physic is studied, learnt, acquired, for thirteen pounds twelve shillings, in about half an hour; attendance, on account of its inconvenience, being excused. At St. Andrew's, the facility is about as great; and thus, for thirteen pounds twelve shillings, a man acquires the right of 'purgandi, seignandi, accidendi, et trucidandi, impune per totam terram.' At Oxford and Cambridge, physic is acquired with the utmost certainty and facility, just as are other things in the same places; at Paris, Leyden, Göttingen and elsewhere, in other modes too tedious to detail. In England, generally, a student labors for seven years in spreading plasters, tying labels on bottles and applying packthread; but, in London, they dig up dead bodies and carve them, walk about an hospital and pay fifty guineas a year for the privilage of guessing what a man called an apothecary means, and what becomes of the money. Added to all this, in times of war, they go to the Peninsula, hew down legs and arms, and bore holes in skulls with a center bit, or do the same thing on board of a frigate. Then a few privileged ones wear scarlet cloaks, make a Latin speech, or listen to one, once in two hundred years, and vote all the rest to be ignoramuses."

Medicolegal

Hospital Liable for Death of Delirious Patient Jumping from Window

(*Wetzel vs. Omaha Maternity and General Hospital Association (Neb.), 148 N. W. R. 582*)

The Supreme Court of Nebraska affirms a judgment against the defendant for $5,500 damages for the death of a patient who, while delirious, jumped from an unguarded window of his room on the third floor of the hospital, in the absence of the nurse, who said that she had not been gone five minutes, while another witness said it was nearly an hour. The defendant contended that there was no evidence of actionable negligence, particularly as the contract was to give the patient general, and not special, care, that the attending physician was selected by the patient or his friends, and that the nurse obeyed all of the physician's instructions. But the court points out that there was testimony tending to show that the patient, having typhoid fever in his own home, was taken to the hospital for better care and attention. When the hospital was called up by telephone to make arrangements for his care, it was said by whoever answered that general care was sufficient for a patient in such condition. The hospital was advised in advance that the patient had been delirious. To protect him from harm, the hospital nurse, on her own initiative, but with the subsequent approval of the physician, kept him for a time strapped to his bed. Then, though his fever remained high and his delirium continued, the straps were released by direction of the physician to permit frequent change of position, made necessary by premonitions of hypostatic pneumonia. The lower sash of the window was movable, unfastened and unprotected when he jumped out.

As law, the court holds that a hospital, incorporated and conducted for private gain, is liable in damages to patients for the negligence of its nurses and other employees. This rule of law rests on the general principle that a master is responsible for the torts or wrongful acts of a servant in the scope of his employment; and this doctrine applies to a hospital receiving for special care delirious patients, who on account of temporary conditions produce by fever or other ailments are not accountable for their own acts or conduct. A patient is generally admitted to a hospital, conducted for private gain, under an implied obligation that he shall receive such reasonable care and attention for his safety as his mental and physical condition, if known, may require. Any other rule would be a reproach to the law and to the hospital management. In the present case the evidence was sufficient to justify a finding that the patient was received under circumstances entitling him to the benefit of the principle stated. Duties which a hospital as such owes to a patient cannot be evaded by proof that the hospital nurse obeyed the instructions of the physician employed by him. Nurses necessarily have charge of delirious patients during the absence of physicians, while the responsibility of the hospital continues. Under the circumstances of this case, self-injury might well have been foreseen. It cannot be said as a matter of law that there was no proof of negligence on the part of the nurse or on the part of her employer. A nurse's absence of five minutes may amount to negligence. The question of negligence, under the circumstances here, was one of fact for the jury.

Roentgen Ray Liability—Changing Physicians—Expert Evidence

(*George vs. Shannon (Kan.), 142 Pac. R. 967*)

The Supreme Court of Kansas affirms a judgment against the defendant, a physician, for injury to the plaintiff in the negligent use of the Roentgen-ray machine in endeavoring to ascertain whether or not he had a stone in the kidney. The defense was that it was necessary to use the machine, that the plaintiff agreed to it, that if any injury resulted it was on account of the plaintiff's susceptibility to Roentgen-ray

action, which could not in the exercise of ordinary care, caution and skill have been ascertained, and that if any burn developed as a result of the operation, it was through the plaintiff's own fault and negligence, and through his failure to follow the instructions to return to the defendant for further treatment.

The court holds that there was no error in an instruction to the jury that if the taking of such pictures in a proper and careful manner does not necessarily result in injury, then the fact that injury did result is some evidence (which may be rebutted) that proper care and skill were not exercised. Nor was there error in an instruction that "A physician is not released from liability for the burning of a patient by the use of the Roentgen ray by the fact that the patient quit the treatment of the physician after said patient was burned by the use of said Roentgen ray, and before said physician was willing that such patient should do so, or that said patient neglected to follow the instructions of the physician as to the use and care of the affected parts." The mere fact of discharging a physician or quitting his care and employing another physician by a patient who believes he has been injured by the negligence of the former physician is not in itself evidence of contributory negligence. In other words, the mere fact that a patient discharges or quits the care of his attending physician and employs another physician is not evidence of contributory negligence in an action by the patient against the former physician for negligence in the discharge of his duty to the patient. If any act of the plaintiff had been shown by the evidence to cause an aggravation of the injury, such evidence would probably have been pertinent in mitigation of damages, but the mere fact of a change of physicians did not raise the presumption that damages were increased thereby.

The defendant produced the testimony of a number of physicians, who were Roentgen-ray operators, which tended to show that a burn would not be expected by the use of the Roentgen ray with less than two or three times the amount of current actually used in this case, as shown by the testimony. On the other hand, there was evidence that the use made of the Roentgen-ray machine and current would be expected in ordinary cases to inflict the burn which the plaintiff suffered. On such conflicting evidence it was the especial province of the jury to determine the fact. This is a question of science in which the average juryman has no special knowledge to enable him to test the credibility and accuracy of testimony; still it does not follow that the mere number of witnesses on either side determines the preponderance of the evidence.

Patient Who Testifies Waives Privilege

(City of Tulsa vs. Wicker (Okla.), 141 Pac. R. 963)

The Supreme Court of Oklahoma holds that a patient, suing a third party for damages for personal injuries, testifying as to the nature and extent of her injuries, and the time and place of treatment, waives the privilege granted by the statute, and renders admissible the testimony of her physician on those subjects. In this case Mrs. Wicker sought to recover for personal injuries alleged to have been occasioned by the negligence of the city in not guarding a dangerous excavation in the streets. During the trial she offered herself as a witness and testified as to the nature and extent of her injuries, as also that she consulted a certain physician, who prescribed for her, she remaining under his care about six months, after which time she called at his office for treatment on various occasions. The city endeavored to ascertain from the physician for what, if anything, he had treated her, and offered to show that he had never at any time prescribed or treated her for an injury to her hip received at the time of the alleged injury. The court holds that it was error to exclude the testimony of the physician, after the plaintiff had voluntarily testified as she had, as it was material, and the attending physician was best qualified to testify as to the nature and extent, time and place of the treatment of the injuries.

Society Proceedings

COMING MEETINGS

American Association of Anatomists, St. Louis, Dec. 28-30.
American Physiological Society, St. Louis, Dec. 27-30.
Amer. Public Health Association, Jacksonville, Fla., Nov. 30-Dec. 5.
Medical Society of Hawaii, Honolulu, Nov. 28-30.
Society of American Bacteriologists, Philadelphia, Dec. 29-31.
Southern Surgical and Gynecological Assn., Asheville, N. C., Dec. 15-17.
Western Surgical Association, Denver, Dec. 18-19.

PHILADELPHIA COUNTY MEDICAL SOCIETY

Meeting held Oct. 28, 1914

The President, Dr. William Duffield Robinson, in the Chair

Abdominal Pain; Its Significance and Diagnostic Value

Dr. John B. Deaver: At least 90 per cent. of all diseases begin with pain or give rise to it at some time in their course. Ordinarily, pain is the result of undue stimulation of nerve fibers by mechanical, chemical or thermal agents. Such pain is objective. There is a type of pain which has no external physical basis. It is a product of disordered mental action. This is subjective pain and is illustrated in the phenomena of hysteria. Such pain belongs to the domain of the neurologist. It is a confession of ignorance to give to pain a name which has no pathologic significance. All the various "algias" should be replaced by terms conveying an understanding of the underlying processes.

The first great obstacle to the appreciation of the significance of abdominal pain has been the belief that pain in this region usually was the result of disordered function.

The second great difficulty in abdominal diagnosis is the inability of the nervous system accurately to localize sensations received from visceral areas. Pain in the abdomen is per se no evidence that the lesion is in the abdomen. Abdominal pain associated with pleurisy or pneumonia, particularly in children, is probably of a reflex nature. Angina may give rise to intense epigastric pain simulating acute surgical disease of the upper abdomen. It is in the milder forms and beginnings of disease that the location of pain is of the greatest value. Of all the organs in the abdomen the stomach presents the greatest variety of symptoms and the most difficult to analyze. If general disease of the stomach is excluded, gastric symptoms should prompt a careful and systematic survey of the abdominal organs. Insignificant chronic disease of the appendix may set up pylorospasm with pain, retention, fermentation and secondary gastritis. It is of the utmost importance to investigate the right iliac fossa of every case presenting epigastric symptoms commonly referred to the stomach. The diseased gall-bladder frequently masquerades as a gastric affection.

Abdominal adhesions are a common source of pain and call for immediate surgical operation. This pain should never be treated with narcotics. At least a year should elapse before operative relief of postoperative adhesions is advised, except in the case of serious symptoms. There is too much morphin used as a routine measure after abdominal operations. When pain makes its appearance on the second or third day or later following operation, the conditions chiefly to be considered are simple distention, peritonitis and obstruction. The most important single feature in differentiation is the character of the pain, whether wave-like and intermittent, or steady and associated with tenderness. The pain of distention and obstruction is, as a rule, colicky and wave-like; that of peritonitis, more steady, diffuse and unremitting.

DISCUSSION

Dr. John B. McAlister, Harrisburg: We often are unable to interpret the language of these pains, and in spite of all our knowledge of anatomy and pathology in the abdomen, exploratory operations for diagnostic purposes will be made. I was called to see a woman who was taken suddenly with severe pain which I felt sure was characteristic of renal colic. Operation revealed a fibroid tumor with considerable colloid

degeneration. The woman had been in apparently good health until that attack of pain. I could not account for the severe pain except that there may have been a twisted pedicle. Another pain in the upper abdomen which is of supreme importance is that of acute pancreatitis or hemorrhagic pancreatitis. I have seen four of these cases. In the first and second cases the diagnosis was made at the necropsy; in the third and fourth the diagnosis was confirmed at the necropsy. The patients were adults without history of previous ill health.

DR. J. LESLIE ELLENBERGER, Harrisburg: Pain is a signal that something is wrong. We should not expect to get rid of pain without removal of the cause, and in ascertaining the cause the utmost care is necessary. I have seen a case presenting all the typical symptoms of appendicitis on admission to the hospital and on the following morning show signs of pneumonia.

DR. JOSEPH SAILER: Pain is a subjective affair, something felt by the patient, which we cannot measure; and, while experience may give us a proper estimate of the patient's manifestation of pain, we may be deceived by those who exaggerate or underestimate its degree. It is astonishing how often patients with valvular heart disease and with tuberculosis of the lungs come to the physician complaining of gastric symptoms. Acute endocarditis in the early stages may so simulate abdominal conditions that operation may seem imperative.

DR. WILMER KRUSEN: I would emphasize the necessity of a bimanual examination in all cases of appendicitis to determine whether the appendicitis is coexistent with pelvic disease or whether all the symptoms are due to salpingitis. The pain of ectopic pregnancy is of such gravity that physicians should be mindful of its possibility in cases of abdominal pain. Also to be considered are the pains associated with neoplasms. In fibroid tumors there is pain due to pressure conditions. In no condition in gynecology is pain so beneficent as in malignancy. The surgeon would welcome the fact that a woman with beginning cancer had pain.

DR. A. C. MORGAN: It is very important that we differentiate between acute and chronic pain. In a large percentage of cases acute pain constitutes a surgical condition calling for prompt action to save the patient's life. I regard the term "dyspepsia" as a very dangerous one, because this condition is not present, but the stomach is giving us warning of trouble elsewhere. The man who is content with the routine treatment of "dyspepsia" with nux vomica, etc., is careless or ignorant and is not a credit to the profession.

DR. JAMES TYSON: I was called yesterday to see a patient with abdominal pain, paroxysmal in character, and with a history of traumatism. The attacks of pain were of slowly increasing severity, resulting in collapse. The patient's abdomen was swollen and to my inquiry of the location of pain he replied that it was general. Passing my fingers in the region of the appendix I found evident tenderness, yet there was nothing that was distinctive. I have not yet made a diagnosis of this case.

DR. S. SOLIS COHEN: I would not eliminate functional disturbance of the viscus from among those conditions giving rise to pain in the abdomen. Organic disease is often overlooked from want of careful examination, but when careful study has been made, and the evidence points to the so-called functional disturbance, then the physician is justified in carrying out medical measures. Several times in my experience I have been unable to exclude appendicitis, gall-stones or gastric ulcer without exploratory operation. A better understanding of the great sympathetic nervous system would give us more light on such cases. There is such a condition as hysteria, but ninety-nine cases out of a hundred called hysteria are something else. In such cases I would advise exploratory operation. I want to confirm the comparative frequency with which acute pancreatitis expresses itself as epigastric pain. I have known cases in which death occurred prematurely because the significance of the pain was not realized. To make a diagnosis one must not study pain or any other symptom alone, but must study his patient thoroughly.

MISSISSIPPI VALLEY MEDICAL ASSOCIATION

Fortieth Annual Meeting, held at Cincinnati, Oct. 27-29, 1914

(Concluded from page 1787)

Certain Physical Signs Referable to the Diaphragm and Their Importance in Diagnosis

DR. RICHARD DEXTER, Cleveland: Conditions which involve the diaphragm may be divided into two groups: 1. Those in which the symptoms of involvement depend on the irritation of the nerves which supply the diaphragm. 2. Those cases in which the position of the diaphragm is affected. Irritations of the pleural or peritoneal coverings of the diaphragm give rise to symptoms at a distance from the structure. The paths of pain distribution conform to type of the viscerosensory reflex in the sense of Mackenzie and Head. The inspiratory contraction of the diaphragm tends to draw the subcostal angle toward the median line. Under normal conditions this contraction is not strong enough to overcome the antagonistic action of the scalene and intercostal muscles. When the position of the diaphragm is lower than normal the contraction of the muscle will be more direct, and will, therefore, equalize or overcome the action of the scalenes and intercostals. The result will be a retraction of the costal angle toward the median line during inspiration. If the diaphragm is pushed up from below the power of its contraction will be lessened with the result that the subcostal angle will depart farther from the median line than usual.

Relation of Gastro-Intestinal Tract to Joint Disturbance; Value of Eliminative Treatment

DR. WILLIAM A. MOWRY, French Lick, Ind.: Derangements of the gastro-intestinal tract operate in the production of chronic affections, such as rheumatism, gout, obesity and probably diabetes. Among 244 patients suffering from joint disturbance, 59 had true gout and 93 had autotoxemic arthritis. Most of the cases were of the chronic type. The fingers and knees were affected equally in two-thirds of the cases, with toes, wrists, ankles and elbows next in order of frequency. Constipation was very frequent in these patients, a few had diarrhea, while some complained of alternating constipation and diarrhea. Only one-third gave a history of headache, usually coincident with stomach or bowel attacks. In forty-eight per cent. of the cases mucus was present in the stools, constantly or intermittently. About half of the patients complained of some form of indigestion, most frequently with eructation and regurgitations. Examination in most cases confirmed the diagnosis of gastritis, colitis, chronic appendicitis and probably cholecystitis. Immediate relief was given by internal irrigation, free purgation and diet. Salicylates were used in the autotoxemic group for the relief from pain, while fomentations and other hydrotherapeutic measures were regulated for each individual patient. Laxative waters were used; paraffin oil and castor oil were given when too large doses of a saline irritated the gastro-intestinal tracts. The results of treatment were most gratifying. Seventeen patients were relieved entirely from pain or stiffness in the joints; all but fifteen of the remaining showed marked improvement. Patients were instructed as to the importance of diet and regulation of the bowels to insure permanent benefit.

Presidential Address: The Public and the Profession

DR. D'ORSAY HECHT, Chicago: The physicians of to-day are wading up to their necks into mysteries of research. The evenings are spent in dutiful attendance at the meetings of the medical society, and the nights under an avalanche of medical journals. There is a lamentable show of personal indifference for the microscope and test-tube. The commercialized general laboratory is an outgrowth of this. Another instance of our tension is the bread and butter physician's restless pursuit of research. Aside from the genuine fascination which the creative faculty is sure to have for some men of the academic type, there comes to my mind the thought that the many amateurs in research recruited from the heterogeneous mass of clinicians are attracted to it by the glamor of the name. By it physicians are diverted from the paths of the clinic, paths quite as congenial and in respect of their

talents and equipment infinitely more promising. Medical society madness, instead of manifesting itself as a phase of the theory of relaxation, presents itself as a symptom of the gospel of intensive work, which it should not. There are thoughtful persons, appreciative of the work of the profession. Then there are others who capitalize themselves as anti-vaccinationists and antivivisectionists. The latter especially are even now spasmodically engaged in pseudoformidable campaigns against the very types of animal experimentation that have resulted in the greatest benefactions to man.

Conservative Versus Radical Treatment of Eclampsia

Dr. J. Henry Carstens, Detroit: Pregnant women should have their blood-pressure taken frequently and also have the urine examined. If symptoms of toxemia develop, a most restrictive diet should be started and the woman placed in a position where she can have prompt medical attendance, preferably in a hospital. If convulsions occur, premature delivery should be brought about by slow process, if the case is mild. In severe attacks of convulsions, immediate delivery should be instituted by the so-called vaginal cesarean section, if the woman is about seven months' pregnant or thereabout. If the woman is at full term, and especially in a primipara, an abdominal cesarean section should be the operation of choice.

Salvarsanized Serum in the Treatment of Locomotor Ataxia, Paresis and Cerebrospinal Syphilis

Dr. William Litterer, Nashville, Tenn.: After giving ninety intraspinal injections of neosalvarsanized serum to fifteen patients over a period of ten months, I have seen in some of these cases remarkable improvement which has persisted up to the present time. With perfect aseptic and cautious doses the method is practically devoid of danger. On account of the numerous areas of poor vascularization in the brain and cord, the most rational treatment of nervous syphilis appears to be the intraspinal administration of salvarsanized serum. Whether it will entirely annihilate the spirochete or whether there may still remain inaccessible foci of infection, which will make recrudescence possible after the lapse of time, the future alone can determine.

Mortality and Morbidity of Appendicitis

Dr. F. F. Lawrence, Columbus, Ohio: The mortality is determined by: 1. The promptness of action after a correct diagnosis. 2. The period at which a correct diagnosis is made. 3. The patient, his resistance, his environment, and whether it is his first or one of many attacks. 4. The family doctor, his ability, his conscience and his courage. 5. The surgeon, his judgment, his skill, and his personal attention to detail. The morbidity depends on: 1. Delayed operations resulting in complications. 2. Abscess formation requiring prolonged drainage. 3. Inefficient drainage when drainage is required. 4. Incomplete operations. 5. Faulty technic which tends to irritate the peritoneal covering, strictures favoring adhesions, leaving the uncovered stump, disseminating infection by overlooking the physics of distention or of tension, and unnecessary trauma.

Present-Day Conception of the Treatment of Nephritis

Dr. Arthur R. Elliott, Chicago: Improvements in treatment may be summarized as a better handling of the cardiac problem, a better standard of control in diet, and improved prophylaxis. Chronic focal infection may play an important part in the etiology of chronic nephritis. As a primary measure in treatment, every case should be examined thoroughly for infective foci and these obliterated by radical treatment when found. Syphilis and chronic lead intoxication are other insidious factors that must be combated.

In the vast majority of cases of chronic nephritis, during the stage of cardiac compensation, the total function of the kidneys is well up to normal. Aided by periodic functional testing to check up the kidney condition the diet may be so regulated as to maintain general nutrition and kidney conservation on a parity. I perform fluid and salt excretion tests in every case of chronic nephritis before laying down the diet. The most important item in the treatment of chronic nephritis is the preservation of cardiac compensation. The high blood-pressure and cardiac hypertrophy of chronic nephritis constitute a compensatory mechanism enabling the kidneys to maintain adequate function. They consequently are essential to the preservation of life and should be protected by every hygienic and dietetic safeguard. High blood-pressure should not be made the object of direct therapeutic attack. Nitrites should be reserved for emergency use to combat such developments as angina, cardiac asthma, etc. The appearance of dropsy in primary chronic nephritis almost invariably signifies the advent of cardiac failure. At this stage the digitalis bodies become the mainstay of treatment and should not be withheld because the blood-pressure is high, as they act just as well or even better with a high blood-pressure as with a falling pressure.

Gall-Bladder Infections: Their Treatment From a Surgical Point of View

Dr. Louis Frank, Louisville: My operative work has been performed under gas-oxygen anesthesia and complete blocking, with preliminary drainage of the gall-bladder, and dividing the operation into two stages. After the gall-bladder has been permitted to drain for some time, and the patient's temperature has receded to normal and the jaundice has subsided, I do a secondary operation removing the obstruction from the duct. Under this plan the mortality has been materially reduced.

Anuria: Its Etiologic and Surgical Phases

Dr. Hugh Cabot, Boston: Anuria should be classified according to its pathology. There are two types, the secretory and the excretory types. Classified by clinical causes, there are three types, the neuropathic, the destructive and the obstructive types. The diagnosis of anuria is always simple. Diagnosis of the cause requires care, use of all the means at our disposal and accurate deduction. Operation must be considered in all cases not due to destruction of kidney tissue. In cases of acute nephritis operation may tide over an emergency, but is rarely indicated. In cases due to obstruction of the ureter from without, operation will relieve the obstruction and is indicated when the cause is wholly removable, as in benign tumors. Operation is always indicated in anuria due to obstruction within the ureter. If both sides are obstructed, both should be operated on at the same sitting. If one is obstructed and the other has stopped secreting from reflex or other causes, operation is indicated only on the obstructed side.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Insanity, Baltimore

October, LXXI, No. 2, pp. 233-437

1 Criticism of Psychanalysis. C. W. Burr, Philadelphia.
2 Pathology of General Paralysis. C. B. Dunlap, Ward's Island, N. Y.
3 Medical Examination of Mentally Defective Aliens: Its Scope and Limitations. L. L. Williams, Ellis Island, N. Y.
4 Applied Eugenics. S. Brown, Chicago.
5 Translation of Symptoms into Their Mechanism. C. L. Carlisle, Kings Park, N. Y.
6 Psychoses in Colored Race. M. O'Malley, Washington, D. C.
7 An Estimate of Adolf Meyer's Psychology. G. V. Hamilton, Montecito, Cal.
8 Dementia Praecox, Paraphrenia and Paranoia. G. H. Kirby, Ward's Island, N. Y.
9 *Mental Disturbances Associated with Acute Articular Rheumatism. R. H. Haskell, Ann Arbor, Mich.
10 Topographic Distribution and Functional Significance of Cortex Lesions and Anomalies in Dementia Praecox. E. E. Southard, Boston.
11 *Psychic Manifestations of Disease of Glands of Internal Secretion. E. M. Auer, Kalamazoo, Mich.

9. Mental Disturbances in Articular Rheumatism.—The exact cause or causes of mental disturbances during the course of acute articular rheumatism, Haskell states, are not

clear. Many of the delirious episodes during the acute stage of the disease are undoubtedly pure fever delirium and should not be looked on in any sense as specific. There are those who, without other signs of psychopathic makeup, regularly show a delirium with only a slight rise in temperature. Such individuals may later develop an endogenous psychosis, seen not infrequently in manic-depressive patients. In the hyperpyretic cases, conveniently so-called, the increasingly high temperature is simply an expression of the extreme toxemia which is affecting the nervous mechanism of the heat regulating center as well as the brain cortex. Whether this toxemia is purely bacterial in origin is unknown. Kraepelin has utilized in the manufacture of a theory the observations that sometimes in these hyperpyretic cases all signs of joint involvement actually do disappear and suggests that the sudden resorption of this fluid floods the body with an excessive amount of some toxic substance which cannot be excreted or made innocuous fast enough to prevent damage to the cerebral cortex. In the protracted cases there are numerous additional factors. The prolonged toxemia, the altered metabolism as a result of this and the physical exhaustion from the disease, together, in many cases, with the added effects of various complications or several relapses of the polyarthritis, all serve to bring about the changes in the cerebral cortex.

The outcome in the superacute cases is imminently bad. The mortality is 82 per cent. In the acute infectious delirium the prognosis is more hopeful, but still serious. Fifty-two per cent. of this class die. In the more protracted cases of the late febrile or convalescent period the prognosis is uniformly good for recovery. The course is usually long, from several months to a year. The treatment is first that of the primary disease. Numerous reasons make it highly advisable that the patient be in a hospital and preferably one especially equipped for the treatment of acute mental conditions.

11. **Disease of Glands of Internal Secretion.**—Auer is of the opinion that in the etiology of the affective psychoses we are evidently dealing with a biologic disturbance. The glands of internal secretion physiologically act not as independent units but, on the contrary, mutually influence functional activity. The occurrence of insanity at puberty and adolescence after severe physical and mental strain and at the time of menopause, all periods when the metabolic changes of the body are intense, and the occurrence in syndromes unquestionably the result of disease of the glands of internal secretion of idiocy, imbecility, depression, mania and dementia suggest strongly that the true etiology of the affective psychoses lies in a functional disturbance of the glands of internal secretion.

American Journal of Roentgenology, Detroit

August, I, No. 10, pp. 361-397

12 Roentgen Findings in Obscure Head Lesions. W. F. Manges, Philadelphia.
13 *Treatment of Cancer by Physical Methods, with and without Surgery. A. F. Holding, New York.
14 *Roentgen Ray Studies on Ileocecal Valve and Appendix. J. T. Case, Battle Creek.

13. Abstracted in THE JOURNAL, October 10, p. 1321.
14. Abstracted in THE JOURNAL, Nov. 8, 1913, p. 1744.

Annals of Surgery, Philadelphia

November, LX, No. 5, pp. 537-664

15 *Early Diagnosis and Treatment of Sarcoma of Long Bones. W. B. Coley, New York.
16 *Experiences in Treatment of Malignant Tumors by Radium. R. Sparmann, Vienna.
17 *Ostitis Fibrosa Cystica. L. H. Landon, Philadelphia.
18 *Review of One Hundred Consecutive Operations for Goiter. C. H. Frazier, Philadelphia.
19 Chronic Cystic Mastitis. G. P. Müller, Philadelphia.
20 *Indications for and Variations in Technic of Eck Fistula. M. M. Peet, Philadelphia.
21 One Hundred and Ten Consecutive Cases of Appendicitis without Mortality. W. B. Brinsmade, Brooklyn.
22 Recent Traumatic Dislocations of Hip. C. R. Steinke, Philadelphia.
23 *Significance of Jelkson Veil. D. N. Eisendrath and E. W. Schnoor, Chicago.

15. **Sarcoma of Long Bones.**—The chief requirement for the early diagnosis of sarcoma of the long bones, according to Coley, are a more careful study of all known clinical data; a larger clinical experience in the diagnosis of sarcoma of the long bones; early and repeated Roentgen-ray examinations in all cases of suspected swellings of the long bones, especially those following trauma; exploratory operation and microscopic examination of the tissue removed in selected cases, but not as a routine measure; realization of the importance of not placing implicit reliance on the negative report of the pathologist, especially when in conflict with clinical and Roentgen-ray evidence that is strongly positive.

16. **Treatment of Malignant Tumors by Radium.**—The hopes placed in radium as a new and successful means in the treatment of malignant tumors, Sparmann says, have not been realized. Moreover, the number of cases in which one might have recourse to radium therapeutics shrinks constantly as experience progresses.

17. **Ostitis Fibrosa Cystica.**—According to Landon the healing of fractures occurring at the site of these cysts is uniformly good and may result in cure of the cyst. Operative treatment, unless one can be quite sure from constant watching that the diagnosis is correct, is always justified. Although in selected cases and in the hands of experienced operators, resection with autogenous grafting has resulted favorably, curettement, crushing in of the walls and primary closure of the wound have been almost universally sufficient to procure a cure.

18. **Operations for Goiter.**—Of the 103 operations done by Frazier there were 80 thyroidectomies with no deaths. Of 3 thyroidectomies for malignant disease, there was one death, a sarcoma in a boy 11 years of age. Of 17 ligations, there were two deaths, both true exophthalmic goiters, one an acute case of six months' duration, the other a case in the terminal stage of the disease. The end results in the toxic cases were in accordance with those recorded from other clinics. Of the patients heard from, 90 per cent. had fully recovered or were greatly improved, and of the latter a number had been operated on within the last year. The completeness of cure, Frazier states, does not depend entirely on the successful removal of the gland. Two other factors must be considered: First, the care of the patients after the operation, which should, whenever possible, free the patient from physical and nervous strain for periods varying from several months to two years. The completeness of the recovery will depend on his appreciation of the need of this after-treatment and whether the circumstances permit of its enforcement. Second, the existence of chronic visceral disease at the time of the operation must be taken into account. Some of these patients are physical wrecks with organic lesions of heart, kidney and other organs, from which complete recovery is impossible.

Frazier emphasizes that the general practitioner has every right, if he so chooses, to try non-surgical means in the early stages of the disease before the myocardium or kidney or nervous system is permanently damaged. But if he fails to arrest the disease and does not advise operation in the curable stage, he should be just as severely censured as the practitioner who fails to call for surgical aid until his patient with acute appendicitis has developed peritonitis, or one with a callous ulcer of the stomach, carcinoma. The extraordinary recuperative power of patients with Graves' disease is amazing, and in most cases, sick as they are at the time of operation, they will almost uniformly be restored to perfect or reasonably good health.

20. **Technic of Eck Fistula.**—From a rather extensive use of the Eck fistula in dogs Peet considers the operation safe, entirely compatible with a normal life, and simple of execution. He prefers the modification of Carrel's technic. In cases of liver cirrhosis with ascites and in cases of thrombosis or other obstruction to the portal circulation, Peet considers the operation advisable, especially so in cases in which esophageal varices exist. In the latter condition, at least, he says, it should prove much superior to omentopexy.

23 Abstracted in THE JOURNAL, January 24, p. 324.

Boston Medical and Surgical Journal

November 5, CLXXI, No. 19, pp. 695-730

24 *Anaphylactic Skin Reactions Excited in Hay-Fever Subjects by Pollen of Various Species of Plants. J. L. Goodale, Boston.
25 Forlanini's Artificial Pneumothorax. G. M. Balboni, Boston.
26 *Asthma in Children. Its Relation to "Egg Poisoning." F. B. Talbot, Boston.
27 Out-Patient Work in Massachusetts State Hospital for Insane. A. W. Stearns, Boston.
28 Transfusion in Treatment of Hemorrhagica Neonatorum. R. M. Green, Boston.
29 *Three Methods for Diagnosis of Tuberculosis by Sputum Examination. R. Ertischek, Rutland.

24. **Anaphylactic Skin Reactions Excited in Hay-Fever.**—Fifty-eight cases giving a history of hay-fever were examined by Goodale. The extracts were prepared by soaking the pure pollen for twenty-four hours in 15 per cent. dilution of alcohol and filtering. Forty-five cases were examined with reference to grasses. It was observed that in all positive cases the red-top, timothy and blue grass equally excited reactions. Of these cases eight were affected by grass alone, none of the other plants tested exciting reaction. Thirteen cases were affected both by grasses and ragweed alone. Six cases showed positive reactions toward grasses, ragweed and golden-rod, and a variety of other plants. Three cases showed positive reactions to grasses and roses alone. The beach grass was tested in twenty-seven cases. This, although flowering late in the season, excited positive reactions in eleven cases of the spring form, fifteen cases being doubtful or negative.

Ragweed was tested in 49 cases. Of these, 45 were positive, 4 being negative; 13 were affected by ragweed alone, no other plants tested exciting reaction. Sixteen were positive with reference both to ragweed and to golden-rod, but not to other plants. One case showed positive reactions to grasses, ragweed and roses, but not to golden-rod or to other plants. Forty-nine cases in all were tested for golden-rod. Of these, 26 were positive, 23 being negative. One case only showed positive reaction to golden-rod alone, without disturbance from other plants, all of the other positive golden-rod cases reacting also to ragweed.

Twenty cases were tested for yarrow, 5 being positive, 15 doubtful or negative. Beach wormwood was tested in 6 cases, 2 of them showing moderate reaction, 4 being negative. Field daisy was tested in 14 cases, 5 of them showing a moderate reaction, 9 being doubtful or negative. Burdock and fall dandelion were tested in 3 cases, showing each 1 positive and 2 negative results. Hawkweed was examined in 17 cases, 5 being positive and 12 negative. English daisy (*Bellis perennis*) was examined in 20 cases, 4 being positive and 16 negative. Pigweed was examined in 26 cases. Three of these were positive, and 23 were negative. Wild carrot, or Queen Anne's lace, was examined in 23 cases, only 1 being positive and 22 negative. Tansy was examined in 12 cases, 2 being positive and 10 negative. Two types of roses were tested, the early flowering Japanese rose and the late flowering prairie rose. The Japanese rose was examined in 19 cases, 3 being positive, the remainder without reaction. The prairie rose was tested in 8 cases with negative results. The mock orange was tested in 6 cases, 2 of these being positive. Tests were also made in a few cases with negative results of the following plants: California poppy, hawthorne, bayberry, frost grape, jack pine, peony, white oak, rhododendron, hardhack.

26. **Asthma in Children.**—Talbot is of opinion that the evidence at hand points to the fact that asthma is a manifestation of anaphylaxis, namely, a local manifestation in the lungs. It is conceivable that the urticaria which is seen on the skin may also come on the mucous membrane of the bronchi, and thus cause the symptoms of asthma. Asthma in a certain number of children is due to egg poisoning. Scarification of the skin and inoculation with egg white will show whether egg albumin is the specific cause of the asthma. Many, if not all cases of egg asthma may be immunized to egg white by feeding them with gradually increasing doses of egg albumin in capsules. When the egg idiosyncrasy is cured the asthma stops unless an idiosyncrasy to some other protein complicates the situation. Horse-asthma is an anaphylactic phenomenon due to protein of the horse and may be recognized by scarifying the skin and applying horse-serum. A similar reaction to the egg reaction results.

29. **Three Methods for Diagnosis of Tuberculosis by Sputum Examination.**—The methods used by Ertischek are as follows: 1. Direct smear. 2. Antiformin digestion. 3. Salting method of Davis. Out of 168 specimens examined, which form the basis of this report, 149 were negative to all three methods. Direct smear found four positives that the antiformin did not. Direct smear found six positives that salting did not. Antiformin found six positives that salting did not. Antiformin found four positives that direct smear did not. Salt solution found six positives that direct smear did not. Salt solution found six positives that antiformin did not. Three specimens were positive to all methods.

Florida Medical Association Journal, Jacksonville

October, I, No. 4, pp. 97-128

30 Family Physician and Public Health. C. E. Terry, Jacksonville.
31 Enemas, Wise and Otherwise. G. M. Niles, Atlanta, Ga.
32 Conservative Abdominal Cesarean Section. C. L. Jennings, Jacksonville.
33 Vincent's Angina. Report of Case. W. G. McKay, Jacksonville.
34 Prostatic Hypertrophy. J. S. McEwan, Orlando.

Illinois Medical Journal, Chicago

October, XXVI, No. 4, pp. 221-486

35 Society Largely Responsible for Most Potent Factors of Nervous and Mental Diseases. C. King, Atlanta, Ga.
36 Duty of State to Protect Society from Defective Individuals. W. S. Lindsay, Topeka, Kan.
37 Man's Tendency Toward Aberration. M. Solomon, Chicago.
38 Relation of Psychiatry to Medicine. C. Ricksher, Kankakee.
39 Bilateral Peripheral Facial Palsy. Report of Case. T. B. Throckmorton, Des Moines, Ia.
40 Diagnosis of Insanity. J. Grinker, Chicago.
41 An Experience in Pedagogy Among Chronic Insane. E. F. Leonard, Chicago.
42 Pathologic Characteristics of Habitual Criminal. P. E. Bowers, Michigan City, Ind.
43 Brain Heredity and Brain Hygiene. J. T. Searcy, Tuscaloosa, Ala.
44 Chronic Alcoholism. C. F. Read, Dunning.
45 Emotional Factor in Etiology of Suicide, Criminality, Insanity and Mortality. H. S. Munro, Omaha.
46 Insight in Cases Recovered from Manic-Depressive Attacks. S. N. Clark, Kankakee.
47 Wisconsin's Fight Against Degeneracy. F. I. Drake, Waupun, Wis.
48 Relation of Cerebellum to Labyrinth. T. L. Long, Cherokee, Ia.
49 Spurious and Genuine Treatment of Psychoses. T. A. Williams, Washington, D. C.
50 Prevention of Nervous and Mental Diseases. C. F. Neu, Indianapolis.
51 Commitment of Insane of United States. T. Diller, Pittsburgh.
52 Dementia Praecox with Special Reference to Treatment. H. A. Lindsay, Independence, Ia.
53 Abderhalden Reaction in Dementia Praecox. A. E. Sterne, Indianapolis.
54 Diagnosis and Treatment of Dementia Praecox. B. Holmes, Chicago.
55 Precautions and Limitations of Abderhalden Method in Examination of Mental Cases. A. Gehrmann, Chicago.
56 Demonstration of Abderhalden Test. C. E. M. Fischer, Chicago.
57 New Cook County Psychopathic Hospital. H. I. Davis, Chicago.
58 Psychosis Accompanying Pellagra. A. A. Thurlow, Norman, Okla.
59 What Are Indications for Restraint? H. J. Gahagan, Elgin.
60 Mental Forces. E. A. Foley, Jacksonville.
61 Sterilization, Segregation, or Custodial Care of Mental Defectives. M. Pogue, Lake Geneva, Wis.
62 Visual Imagery and Verbal Thought. C. H. Town, Lincoln.
63 Medicopsychologic Work in Courts. W. Healy, Chicago.
64 Reeducation of Attentive Control. G. W. Robinson, Kansas City, Mo.
65 Prevention of Epilepsy. O. S. Hubbard, Parsons, Kan.
66 Epileptoid Convulsions in Alcoholics and Their Relation to Genuine Epilepsy. E. W. Katzen-Ellenbogen, Trenton, N. J.
67 Public and Private Care of Epileptics in United States and Canada. W. C. Graves, Chicago.
68 Social Aspects of Epilepsy. M. D. Lynch, Chicago.
69 Coagulation Time of Blood in Epileptics. D. A. Thom, Palmer, Mass.
70 Case of Infantilism with Hypophyseal Insufficiency. E. B. McCready, Pittsburgh.
71 Rational System of Medical Physio-Psychologic and Mental Tests for Determination of Exceptional Development in Children. M. P. E. Groszmann, Plainfield, N. J.
72 Organic Brain Lesions in Mental Defectives. W. J. Hickson, Chicago.

73 Relation of Adenoids and Tonsils to Mental Deficiency. A. M. Corwin, Chicago.
74 Relation of Eyes to Mental Deficiency. O. Dodd, Chicago.
75 Feeble-Minded: Their Environment and Social Relation. H. C. Kehoe, Frankfort, Ky.
76 Nervous and Mental Findings in Feeble-Minded Children. J. J. Mendelsohn, Lincoln.
77 Physical Cause of Mental Disease. C. W. Sawyer, Marion, Ohio.
78 Mental States in Famous Cness Players. L. Miller, Toledo, Ohio.
79 Demonstration of Living and Stained Spirocheta Pallida. C. E. Sidwell and L. D. Smith, Chicago.
80 Principles and Technic of Lange Gold Colloid Test. L. D. Smith, Chicago.
81 Lange Gold-Sol Test in General Paralysis. G. W. Brock, Peoria.
82 Relation of Syphilis to Production of Feeble-Mindedness. G. Bliss, Ft. Wayne, Ind.
83 Control of Venereal Diseases. W. A. Evans, Chicago.
84 Technic for Mixing Materials in Wassermann Test by Drop Method. W. T. Mefford, Chicago.
85 Importance of Early Diagnosis in Locomotor Ataxia. R. C. Hamill, Chicago.
86 Transient Lesions in Early Paresis. B. F. Williams, Lincoln, Neb.
87 Intraspinal Injections of Neosalvarsan. G. W. Hall and R. C. Hamill, Chicago.
88 Salvarsan in Syphilis. W. A. Pusey, Chicago.
89 Surgery in Hospitals for Insane. E. M. Green, Milledgeville, Ga.
90 Presenile Psychosis. E. Z. Levitin, Peoria.
91 Case of Dementia Praecox. W. L. Treadway, Ellis Island, N. Y.

Medical Record, New York

November 7, LXXXVI, No. 19, pp. 783-824

92 *Albumin in Sputum and Its Relation to Pulmonary Disease. G. R. Callender, Fort Bayard, N. M.
93 Problems of Life. H. M. Friedman, New York.
94 One Hundred and Fifty Cases of Twilight Sleep. J. Heller, Brooklyn.
95 Practical Points in Tonsillar Infection. B. Robinson, New York.
96 What Preparation Is There in Fundamental Branches in Dental Schools for Teaching Oral Surgery? A. H. Levings, Milwaukee, Wis.
97 Foot Troubles as Factor Affecting Human Efficiency. J. B. Tyrrell, Chicago.

92. **Albumin in Sputum and Its Relation to Pulmonary Disease.**—The following technic is used by Callender after trials of all other recorded methods, and it is recommended for those who desire to continue work with this procedure. Twenty-four-hour amounts of sputum are collected and examined fresh. The material is placed in a glass-stoppered flask, and equal quantity of 3 per cent. acetic acid added, and the mass rendered homogeneous by shaking. Allow to stand for five minutes and filter. Add 1 drop of glacial acetic acid to the filtrate to be sure of complete precipitation of mucin and repeat filtration if necessary. Take a convenient quantity, as 4 c.c., and add an equal volume of supersaturated magnesium sulphate solution, about 80 per cent. (This solution may be used at 60 C. and kept in the 37.5 C. incubator). This precipitates globulin. To another similar portion add 5 drops of 10 per cent. potassium ferrocyanid to precipitate albumin. If much globulin is found to be present by the first determination it will be necessary to filter it out before proceeding with the test as the ferrocyanid precipitates both. Except in work involving an estimation of the prognosis and cases in which globulin is more than an opalescence, this is rarely necessary. In the case of globulin precipitates form slowly and tend to remain in suspension. It was found that the heavy clouds formed in the reaction will form precipitates if given a little time. The negatives then are reactions showing no change in the clarity of the material or an opalescence or cloudiness that does not settle as a precipitate and such as may be obtained from the sputum of persons with no respiratory disease.

One hundred and eight cases are reported. Incipient active cases all showed a positive reaction. Of the moderately advanced cases 40, or 80 per cent., were positive and of the far advanced 90.3 per cent. contained albumin. One of the negative cases in the far advanced series was clinically in extremis, but repeated trials failed to show the reaction. Of fibrous cases 10 cases were examined in a separate group. Of these, 2, or 20 per cent., were positive for both albumin and globulin; the rest being negative for both. Both of the positive cases showed periodically tubercle bacilli in the sputum. A cardiac case, showed during partial compensation a plus reaction. Two months later, when compensation was complete, though raising some sputum, the reaction was negative. Two cases of bronchial asthma were repeatedly negative. A case of pulmonary syphilis showed abundant precipitates of both albumin and globulin. A case of fibrinous bronchitis, showed at all times a small amount of albumin not estimable quantitatively. A case of subacute bronchitis and a case of bronchiectasis, similarly showed small amounts of albumin. Two cases of subacute rhinitis and nasopharyngitis showed constantly in the purulent sputum a small amount of serum albumin.

Three cases in which artificial pneumothorax had been produced showed on first examination a trace of globulin and a heavy albumin precipitate. Two months later all three cases clinically showed a marked improvement and in all three the globulin had increased to a double plus reaction while the albumin was present only in traces. Callender concludes that albumin is not present in the sputum from all cases of active pulmonary tuberculosis. An increase in globulin, accompanied by a decrease in albumin, is a favorable prognostic sign. Albumin is present in the sputum from cases of pulmonary syphilis and is therefore not a means of differential diagnosis between that disease and phthisis. As a general rule, though there are exceptions, the albumin content corresponds to the amount of activity. Fibrous cases with moisture but no active tuberculosis in the lungs do not show appreciable amounts of albumin in the sputum.

Military Surgeon, Chicago

November, XXXV, No. 5, pp. 411-510

98 Preparedness. C. Adams, Illinois N. G.
99 Personal Experience and Professional Observations of So-Called Annual "Physical Test" (1910). H. G. Beyer, U. S. Navy.
100 Progress in War Transportation: Motor Ambulance, Motor Hospital and Motor Surgery. F. W. Foxworthy, U. S. Army.

New York Medical Journal

November 7, C, No. 19, pp. 901-948

101 *General Anesthesia, with Special Reference to Surgery of Genito-Urinary Tract. J. T. Gwathmey, New York.
102 Local Anesthesia in Relation to Surgery of Genito-Urinary Tract. J. F. Mitchell, Washington, D. C.
103 Is Modern Antituberculosis Crusade Really a Failure? S. A. Knopf, New York.
104 Operative Treatment of Cancer from Standpoint of Internal Medicine. A. L. Benedict, Buffalo.
105 Implantation of Generative Glands and Its Therapeutic Possibilities. G. F. Lydston, Chicago.
106 Pilocarpin in High Blood-Pressure. W. D. Robinson, Philadelphia.
107 Relief of Gas Pains after Appendicectomy. T. A. Kenefik, New York.
108 Some Essential Points in Infant Feeding. E. S. Rimer, New York.
109 Hodgkin's Disease. A. K. Yoosuf, Worcester, Mass.

101. **General Anesthesia with Reference to Surgery of Genito-Urinary Tract.**—Most patients to be anesthetized, either locally or generally, Gwathmey urges, should have the benefit of physiologic doses of morphin before anesthesia, and also of an alkali, and carbohydrate treatment both before and after operation. For very weak and feeble patients, for those in the extremes of life, or where exhaustion with acidosis is present; also where the patient is in a state of coma or has acute or subacute nephritis, or any respiratory affection, the morphin should be omitted and bromids, or paraldehyd and olive oil, per rectum, should be substituted. The essence of orange-chloroform-ether sequence, or the nitrous oxid-oxygen-ether sequence should be used instead of ether by the drop method or the "gas-ether" sequence. Chloroform throughout is the anesthetic of choice for chronic alcoholics in fair condition. Oil-ether colonic anesthesia is indicated for the very obese. For office work and short operations, it is both safe and satisfactory to use only nitrous oxid and oxygen, without any preliminary medication or the addition of ether. For major operations in genito-urinary surgery, patients can be narcotized with nitrous oxid and oxygen alone, if proper preliminary medication is given, and this combination should be more frequently employed.

Ophthalmology, Seattle, Wash.

October, XI, No. 1, pp. 1-236

110 Contribution to Experimental Study of Ocular Anaphylaxis. M. J. Schoenberg, New York.

111 Modern Therapy of Pneumococcic Infections of Eye. H. S. Gradle, Chicago.
112 Trachoma on Blackfeet Reservation. O. S. Phillips, Lapwai, Ida.
113 Contagious and Infectious Diseases Among Indians. B. J. Lloyd, Seattle.
114 Trachoma Among Indians of United States. W. H. Harrison, Missoula, Mont.
115 Ectropion of Eyelids Corrected by Skin-Grafts. L. F. Appleman, Philadelphia.
116 Prognosis in Eye Injuries. R. J. Tivnen, Chicago.
117 Fusion Faculty as Type of Faculty. M. Albro, Chicago.
118 Keratoconus. E. E. Gibbons, Baltimore.
119 Color Testing with Special Reference to Stilling's Plates. G. H. Taylor, New South Wales.

Surgery, Gynecology and Obstetrics, Chicago

November, XIX, No. 5, pp. 555-682

120 *Choice of Method of Operation in Treatment of Gastric and Duodenal Ulcer. F. A. von Eiselsberg, Vienna.
121 Choice of Operation in Chronic Gastric and Duodenal Ulcers. J. Sherren, London.
122 Ankylosis: An Experimental Study. N. Allison and B. Brooks, St. Louis.
123 *Is Thrombo-Angeitis Obliterans an Infectious Disease? L. Buerger, New York.
124 *Forward Fixation of Cervix as Predisposing Cause of Some Retrodeviations of Uterus; Operation for Its Release. E. Reynolds, Boston.
125 Intestinal Stasis: Causes of Ileal Stasis. J. T. Case, Battle Creek, Mich.
126 Diagnosis of Particular Form of Hydronephrosis Due to Movable Kidney. H. A. Kelly and R. M. Lewis, Baltimore.
127 *Regeneration of Cartilage and Bone with Special Study of These Processes as They Occur at Chondrocostal Junction. S. L. Haas, San Francisco.
128 *Clinical Manifestations of Disease of Glands of Internal Secretion in Gynecologic and Obstetric Patients. R. T. Frank, New York.
129 Volvulus: Torsion of Whole Mesentery. R. E. Weible, Fargo, N. Dakota.
130 Causal Factors in Disposition to Cancer in Old Age. A. Theilhaber, Munich, Germany.
131 Sinclair's Method for Operating on Impassable Urethral Stricture. C. H. Chetwood, New York.
132 Study of Chronic Intestinal Stasis by Means of Roentgen Rays. G. E. Pfahler, Philadelphia.
133 *Bone Transplantation as Treatment of Fracture and Fracture-Dislocation of Spine. E. P. Palmer, Phoenix, Ariz.
134 Decortication of Lung. R. S. Fowler, Brooklyn.
135 Traumatic Aphasia. Report of Case. H. A. Haubold, New York.
136 Tracheotomy: New Retractor and Tube Pilot for Emergency Operation. F. L. Hupp, Wheeling, W. Va.
137 Unusual Laceration of Female Urethra. A. Figueroa. Merida, Mexico.
138 Splenectomy for Primary Pernicious Anemia. W. W. Roblee, Riverside, Cal.
139 *Pneumatic Bag Pressure for Controlling Hemorrhage Following Suprapubic Prostatectomy. F. R. Hagner, Washington, D. C.
140 *Modification of Technic in Operation for Suppurative Appendicitis, Based on Postoperative Hemorrhage. C. S. White, Washington, D. C.
141 Results of Operation (Laryngofissure) for Intrinsic Cancer of Larynx. St. C. Thomson, London.

120. **Surgery of Gastric and Duodenal Ulcer.**—Out of a total of 334 gastro-enterostomies for gastric ulcer done by von Eiselsberg, seventeen patients died after the operation. In twelve of these the ulcer was recent. Eight died from causes referable to the ulcer itself; for instance, hemorrhage from the ulcer, due to a continuing progressive ulceration. There were 317 recoveries with 134 cures. In eight of thirty-one unrelieved cases, the ulcer was situated at the pylorus. In eleven cases the ulcer was situated at a distance from the pylorus. Eight cases were duodenal ulcers. In four cases the ulcer was not located; there were adhesions and probably the ulcers were duodenal. The interesting point demonstrated by these thirty-one cases is that ulcers situated at a distance from the pylorus are not so greatly influenced by gastro-enterostomy as those situated at the pylorus. First among the causes which are responsible for failure to cure by operation is the development of a postoperative peptic ulcer of the jejunum. This occurred seven times in 334 gastro-enterostomies.

Thirteen patients, or about 10 per cent., died of cancer of the stomach. In six the continuance of the growth and the development of the ulcer after the operation were the causes of death. In one of these six cases, the patient developed morphin habit through the pain he suffered, and died; another died from hemorrhage; another died following perforation of the ulcer; another had very severe pain and hemorrhage; jejunostomy was performed, but the patient committed suicide; and finally in one case the pains continued, but further details are unknown. Three patients died of tuberculosis of the lungs. One patient died of tumor of the suprarenal body. The cause of death in the remainder is unknown.

In thirty-six cases of ulcerative processes in the stomach and duodenum, unilateral pyloric exclusion was performed. Eleven patients made a complete recovery after the operation. Of four cases unrelieved, in one the whole ulcer was extirpated to relieve the continued pain, and cure followed; one patient still suffers from attacks of hemorrhage; and two patients developed symptoms of peptic ulcers. Of three who died at a later date, one developed cancer of the stomach and two patients developed peptic ulcers.

Von Eiselsberg observed the formation of peptic ulcers seven times in gastro-enterostomies. In addition to this he has found peptic ulcers in five patients on whom gastro-enterostomies had been done by other surgeons and in one of whom he did relaparotomies. Four patients developed symptoms of peptic ulcer following unilateral pyloric exclusion. In the seventeen cases the chief symptom was the development of a very painful induration in the neighborhood of the gastro-enterostomy fistula, the discomfort and pain becoming so great that one could scarcely touch the spot. Von Eiselsberg emphasizes that whenever possible the peptic ulcer should be excised.

123. **Is Thrombo-Angeitis Obliterans an Infectious Disease?**—This question is answered by Buerger in the affirmative. He says that thrombo-angeitis obliterans is a disease in which an acute inflammatory lesion and occlusive thrombosis of arteries and veins are the characteristic lesions. From the mechanical point of view and from the point of view of symptomatology, the thrombotic occlusion is the most important phenomenon. The thrombosis is probably preceded, and certainly accompanied, by an acute inflammatory or exudative stage. The lesion involves deep veins in about 40 per cent. and the superficial veins of the upper and lower extremity in 20 per cent. of the cases. Recent investigations of the veins show that the acute lesions in the superficial vessels and the deep vessels are identical. The histologic changes in the veins point to the existence of an infectious process. Buerger believes that future studies should be directed toward the discovery of the causative agent in specimens cut out from the superficial veins when they are the seat of the acute thrombophlebitis. In this way it is hoped that the etiology of the disease may soon become revealed.

124. Abstracted in THE JOURNAL, June 20, p. 1987.

127. **Regeneration of Cartilage and Bone.**—It is Haas' opinion that the periosteum is directly and actively concerned in the regeneration of bone. In the early stages the periosteum proliferates to form a cartilaginous tissue, which is later transformed into bone. The exact method of the changes from cartilage to bone cannot be determined. There is considerable evidence in favor of the direct change of the cartilage-cell into the bone-cell. There is at times the appearance of the osteoblast forming bone and substituting the cartilage. Therefore it seems to Haas that both processes can take place at the same time. The regeneration of bone also takes place from the marrow and cortical bone, but in a more limited degree and at a later period than that from the periosteum. The regeneration of cartilage takes place almost entirely from the perichondrium. It proceeds by a direct proliferation of all the layers of the perichondrium beneath the outer fibrous tissue. There is some evidence in favor of the view that the connective tissue is also transformed into cartilage under the stimulation of the neighboring cartilage or perichondrium. There is a slight amount of regeneration of cartilage from the original cartilage near the perichondrium, but the remainder of the cut end tends to undergo degenerative changes. The extent of the removed cartilage exerts no influence on the regeneration.

128. **Disease of Glands of Internal Secretion in Gynecologic Patients.**—The following facts are emphasized by Frank. The glands of internal secretion control and regulate many

vital processes, including development, growth, nervous impulses, psychic manifestation, metabolism and reproduction. Each gland, regarded individually, exerts a predominant influence on one or more of these functions. In order to produce a perfect individual and maintain perfect health, the interaction of these glands must be normal. Disturbance of this perfect interrelation reacts on the genital sphere in only one of two ways—in an increase or a decrease of function. The gonads, in turn, may react on one or more of the other ductless glands, causing a multitude of variations. The ovary, through which all impulses to the genital tract are transmitted, or in which they originate, is a compound organ (like the hypophysis or adrenal) made up of at least two (follicle apparatus, corpus luteum) or perhaps three (interstitial gland) components. Of these components, the follicle apparatus (and perhaps the interstitial gland) controls the growth and nutrition of the genitals, the corpus luteum controlling the periodicity and production of the cyclical changes. The local pregnancy changes are probably accounted for by the persistence of the corpus luteum, but that the products of conception, which surely cause the persistence of the yellow body, may share in causing both the local and systemic phenomena accompanying pregnancy.

Genital hypofunction manifests itself clinically chiefly as follows: a. Anatomically; locally, by aplasia of the genitals, systemically by the signs of infantilism, eunuchoidism, and other variations depending on the time of onset and the other ductless glands most affected. b. Symptomatically; by scant or infrequent menstruation, amenorrhea, dysmenorrhea and sterility. The genital hyperfunction manifests itself clinically chiefly as follows: a. Anatomically; locally, no change, "metritic type," fibroids (?); systemically, often no change. b. Symptomatically, by too profuse, too prolonged, or too frequent menstruation; occasionally, by overfertility.

133. **Bone Transplantation in Fractures of Spine.**—As the result of a trauma Palmer's patient sustained a laceration of the supra- and infraspinous ligaments between the eleventh and twelfth dorsal and first and second lumbar vertebra. Both lamina of the twelfth dorsal were completely fractured and displaced inward, pressing on the cord, so all that was necessary to expose the cord was to dissect the soft tissues from the spinous process and lift the bony fragment from its bed. The right lamina of the first lumbar vertebra was fractured. Removal of the bony fragment of the twelfth dorsal revealed a cord compressed by angulation of the spinal canal at the junction of the twelfth dorsal and first lumbar vertebra. The cord compression was relieved by a laminectomy on the first lumbar. The cord soon regained its normal fullness and appeared uninjured.

Three weeks after the laminectomy two spinous processes above the injured vertebra and two below were exposed. The supraspinous and infraspinous ligaments over and between the two processes above, and then those of the two processes below, were cut through and separated from the tips of the spines. The supraspinous ligament over the injured vertebra was cut through and the muscle separated to make a bed for the transplant. Six and one-half inches by 1 inch by ¾ inch, with periosteum and marrow-substance removed from the crest of the right tibia. Recovery was uneventful. The patient left the hospital twelve weeks after the injury, able to stand alone and walk with assistance. Since the fifteenth week she has walked freely without assistance and has improved steadily.

139. **Controlling Hemorrhage Following Suprapubic Prostatectomy.**—The following is Hagner's method of application: A specially constructed sound with beveled end is passed into the urethra and out through the suprapubic wound; the tube attached to the bag is threaded over the beveled end and the sound withdrawn through the urethra, the tubing being pulled through and the bag pulled into place by traction on the tube. The bag is then distended with air by Janet's syringe, the pressure within the bag being readily discernible by the back pressure on the syringe. To help hold the bag in place, Hagner has wrapped gauze around the tube in cases in which it comes in contact with the end of the penis; however, the cut-off muscle tends to shut down on the tube and hold the bag in position.

140. **Operation for Suppurative Appendicitis.**—White believes that the routine ligation of the deep epigastric in drainage cases when the incision approaches the vessel will reduce the morbidity and mortality of the surgical treatment of appendicitis.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Roentgen Ray, London

October, XIX, No. 5, pp. 159-198

1 Cerebral Electrization. S. Leduc.
2 Cinematography of Antrum Pylori, and First Part of Duodenum. A. H. Pirie.
3 Gastric Borborygmi. A. E. Barclay.
4 Comparative Value of Roentgen Rays and Radium in Treatment of Malignant Growths. F. Hernaman-Johnson.
5 *Plastic Roentgen Ray Proof Preparation of Use in Roentgen Therapy. E. P. Cumberbatch.

5. **Plastic Roentgen-Ray Preparation of Use in Roentgen Therapy.**—The following formula, Cumberbatch says, is opaque to the Roentgen rays, it can be easily moulded, and it does not adhere to the patient's skin. A sample which was made twenty-two months ago has retained its plasticity to the present day. The preparation is composed of:

Bees' wax	1	parts by weight
Vaseline	1	
Resin (finely powdered)	¼	
Lanolin (hydrous)	½	
Lead oxid (litharge), finely powdered	6	

The first four ingredients must be melted on a boiling water-bath, in the order given, and each must be completely melted before the next is added. Then the finely powdered litharge is added, little by little, stirring all the time. When all is added, the vessel is removed from the water-bath and allowed to cool. Stirring must be continued till the mixture become viscid, otherwise the heavy litharge will sink to the bottom of the vessel and the preparation will have an uneven consistency. Immediately after it has solidified it tends to adhere to the skin of the operator when it is moulded, but the preparation improves greatly after a few days, especially if it is occasionally moulded. A layer about 1 millimeter thick appears to be perfectly opaque to the Roentgen rays when placed under a screen between it and the source of the rays, and the outlines of a piece of lead ⅛ inch thick are not discernible. Cumberbatch has found the preparation useful in the Roentgen-ray treatment of rodent ulcers of the lower lid, and for a case of keloid of curious shape situated over the side of the face.

British Medical Journal, London

October 24, II, No. 2808, pp. 697-740

6 Influence of Enforced Dogmatism in Medicine. F. Treves.
7 Use of "Dum-Dum" and Explosive Bullets in War. W. F. Stevenson.
8 Soldiers' Feet and Footgear. (To be continued.) C. Webb-Johnson.
9 Insects and War: Flies. A. E. Shipley.
10 Action of Radiations on Cells and Fluids. W. S. Lazarus Barlow.
11 Variability Among Bacteria and Its Bearing on Diagnosis. W. J. Penfold.
12 *Presence and Significance of Nitrites in Urine. J. Cruickshank and J. M. Moyes.
13 *Recognition of Hemic Infections of Urine: Its Clinical and Experimental Value. E. C. Hort.
14 Aneurysm of Aorta Due to Bacterial Infection. J. M. Morgan and J. H. Teacher.

12. **Presence and Significance of Nitrites in Urine.**—Cruickshank and Moyes are of opinion that the most common cause of nitrituria is an associated urinary infection, and that the presence of bacilluria should be sought for in all cases. The organisms generally belong to the *B. coli* group and possess in marked degree the power to split the nitrate of urine into nitrite. The test for nitrite in the urine affords a simple and fairly reliable method of detecting cases of urinary infection without the use of microscope, provided that

the infection is not of such degree as to render the urine markedly alkaline.

13. **Hemic Infections of Urine.**—In fifteen recent cases of typhus occurring in Ireland, Hort made films from the fresh blood, and obtained cultures from which he was able to identify the large so-called diplococcal and diplobacillary organisms which various observers have regarded as the causal agents of the disease. He has found that injections of the cultures of these organisms in citrated human blood, in which growth is easily obtained, has in no case produced any observable pathogenic effects in bonnet monkeys. He concludes, therefore, that these large organisms are not themselves responsible for the production of the disease.

In thirty cases of typhus Hort examined the urine by immediate examination of fresh specimens and by cultivation. In the great majority the fresh urine during the period of fever was turbid from the presence of micro-organisms. Both in catheter specimens in the two sexes and in non-catheter specimens the bacteriologic findings in films made from the fresh centrifuged urine were strikingly similar. In all the urines examined before the crisis great numbers of large coccal and bacillary organisms, morphologically similar to those found in the blood, were observed, and their identity was later established in the ordinary way. In each case there were also present in the deposits of the fresh urine minute organisms which occurred singly, or in pairs or in clusters. When in clusters, as well as when occurring free, they were sometimes coccal in form, sometimes bacillary, and often it was impossible to determine whether they were the one or the other. They were both Gram-positive and Gram-negative in the same clusters, they had no apparent capsules, and they were non-motile. They varied in size from about 0.1 or 0.2 micron to about 0.5 micron in their greatest diameters when in pairs, and when single their greatest diameter was proportionately smaller. They rapidly disappeared from the urine when this was incubated, and after a few hours the larger coccobacillary forms only could be found, and these readily multiplied both in urine and in, or on, the ordinary laboratory mediums. Injection of these cultures into bonnet monkeys produced no apparent pathologic effect.

After filtration of the urine through tested Berkefeld candles Hort was able in many cases to show, by immediate examination of the filtrate, the small coccobacillary forms freed from admixture with the larger non-pathogenic organisms. When, however, the filtrate was incubated, they quickly disappeared, their place being taken by the large coccal and bacillary organisms, which also proved on injection into bonnet monkeys, to be non-pathogenic. The fresh urine of bonnet monkeys successfully inoculated with human typhus blood contained, during the period of fever, great numbers of the small and large coccobacillary forms, and the filtrate of this urine, when fresh, also contained the smaller forms alone. If, however, incubation were allowed for a few hours, they could no longer be found, their place being again taken by the large non-pathogenic forms.

By inoculation of human blood-agar with the fresh filtrate of fresh human typhus urine Hort has been able to obtain cultures of the small coccobacillus in which the small size is retained. On subculture, however, it tends to become mixed with larger forms. Injections of the first culture on human blood-agar into two bonnet monkeys gave rise to a high continued fever after the lapse of a definite incubation period of a few days. From fresh human typhus blood, and from fresh cerebrospinal fluid, Hort has been able to cultivate the small coccobacillus on human blood-agar, as in the case of fresh urine. On injection of the blood and cerebrospinal cultures on blood-agar the procedure has, in bonnet monkeys, been followed by high fever after a well-marked latent period.

Journal of Obstetrics and Gynecology of British Empire, London

July, XXVI, No. 1, pp. 1-72

15 *Etiology of Eclampsia and Albuminuria and Their Relation to Accidental Hemorrhage. J. Young.
16 *Further Modification of Anterior Colporrhaphy Combined with Amputation of Cervix. W. E. Fothergill.
17 Aneurysm of Internal Iliac Artery. W. E. Fothergill.
18 Post Mortem Specimen of Ruptured Tubal Pregnancy; Symptoms Suggesting Irritant Poisoning. W. A. Mackay.
19 Ovariotomy Followed by Ectopic Pregnancy in Stump. H. Clifford.
20 Three Cases in Which an Early Twin Ovum Was Delivered Together with Full-Term Child. W. W. King.
21 Case of Allantoido-Angiopagous Twins. D. Dougal.
22 Case of Double Ovarian Cyst. M. H. Phillips.
23 Contraction Ring as Cause of Dystocia. V. B. G. Armytage.
24 Mammary Murmurs of Lactation. E. M. Cowell.

15. **Etiology of Eclampsia and Albuminuria.**—That eclampsia and the albuminuria of pregnancy are due to the liberation of the products of early autolysis of the placenta, Young says, has been established by the following considerations: (1) The toxemias are especially associated with recent infarction of the placenta. (2) Placental infarction is due to an interference with the maternal blood supply of the part. (3) The interference with the blood supply, which is responsible for the infarction, is not dependent on a toxic state and in point of fact may occur in the most extreme form, in which there is no evidence of a toxemia, namely, accidental hemorrhage. (4) The placenta is so constructed that, if a part of it dies, the products liberated from the dying patch can pass directly into the blood-stream. (5) In cases in which the placental disease is gradual in its onset there is more chance of the evolution of the infarcted patches. This explains why, in long-standing albuminuria, there may be more visible placental disease than in an acute eclampsia. It is just the gradual development of the toxemia that allows of the pregnancy continuing. (6) These facts all suggest that the toxemias are due to the autolytic products liberated in the early stages of the placental death.

By imitating the process, which occurs *in utero*, it has been possible to isolate from the healthy placenta a material or materials of a soluble kind which reproduce the clinical features and morbid changes, which all agree are especially characteristic of eclampsia. These are (a) convulsions; (b) peripheral focal necrosis in the liver, and (c) degenerative lesions in the kidney, especially located in the convoluted tubules. Young urges making a thorough exploration of the uterus in all cases of post partum eclampsia for a small piece of retained placenta, for a comparatively small piece may suffice to liberate fatal poisons.

16. **Anterior Colporrhaphy.**—The steps of the Fothergill operation by the new method are as follows: 1. Dilate the cervix. 2. Pick up four points, one just behind the urethral orifice, one at the junction of the cervix and the posterior vaginal wall, and one on either side of the cervix, about an inch to right and to left of the cervicovaginal junction. 3. Connect the four points by an incision through the vaginal wall. 4. Begin at the urethral angle of the incision and separate the area of vaginal wall enclosed by the incision from the bladder and the other adjacent structures until it remains attached only to the cervix. 5. Snip round and round the cervix until a sufficient portion of the latter is exposed. 6. Cut through the cervix without splitting it. 7. Stitch the stump of the cervix into the posterior angle of the wound, working from behind forward, and placing the sutures so that they radiate round the new os uteri. 8. Close the remainder of the incision from side to side.

Journal of Tropical Medicine and Hygiene, London

September 15, XVII, No. 18, pp. 273-288

25 Trypanosomiasis in Lado of Anglo-Egyptian Sudan. A. J. Chalmers and W. R. O'Farrell.

October 15, No. 20, pp. 305-320

26 Hyphomycetes Found in Sprue: Classification of Fungi of the Genus "Monilia Gmelin 1791." A. Castellani.
27 Beriberi in Papua. W. M. Strong.

Lancet, London

October 24, II, No. 4756, pp. 979-1030

28 Advances in Knowledge Regarding Circulation and Attributes of Blood Since Harvey's Time. R. D. Powell.
29 Shell Wounds in Modern Naval Warfare. B. Pick, R. A. Rankine and J. Lambert.
30 Pyloric Obstruction in Infants. C. H. Miller.
31 Prognosis in Cancer of Tongue. W. Trotter.
32 Case of Malignant Disease of Lung. H. N. Taylor.
33 Limitation of After-Pain of Quinin Injections. A. G. Peter.

Practitioner, London

October, XCIII, No. 4, pp. 445-588

34 *Study of Rheumatic Infection. F. J. Poynton, C. D. S. Agassiz and J. Taylor.
35 *Carcinoma of Stomach, with Reference to Treatment. J. Sherren.
36 Surgical Treatment of Hydrocele. J. S. McArdle.
37 Value of Large Doses of Tuberculin. W. C. Wilkinson.
38 Points in Examination of Nose and Treatment of Its Common Disorders. M. Yearsley.
39 Operative Treatment of Exophthalmic Goiter. Report of Fourteen Cases. A. J. Walton.
40 Value of Rectal Examination in Diseases Other than Those of Rectum. H. G. Anderson.
41 Hemorrhoids. I. Back.
42 Intubation Instruments. E. W. Goodall.
43 Law and Medicine, 1913-1914. W. A. Brend.
44 Dangers of Double Meaning Suggestion. A. Douglas.

34. **Rheumatic Infection.**—The author's analysis is based on 350 fatal cases of rheumatism. There were 195 females and 155 males in this series. In 100 consecutive cases there was a strong family history in 26. In 250 cases under 12, 59 died in what were apparently first attacks, and four more were doubtful. In 100 cases over 12, only 3 deaths were recorded in a first attack, and 2 of these were practically children, being both 13 years of age. One case, a young woman of 21, died in a first attack of acute carditis. With few exceptions, the fatal issue was the result of cardiac disease and its complications. In 250 cases under 12 the pericardium was affected in 215. In 250 cases the mitral valve was only reported undamaged in 3; the aortic valve in 102 cases; the tricuspid in 78 cases; the pulmonary valve in 6 cases. In this series, there were 102 examples of combined aortic and mitral lesion. An analysis of the cardiac lesions in patients over 12 years showed that 22 died of malignant endocarditis; 29 died of mitral stenosis; 20 died of mitral and aortic disease of the simple form; 15 died of double mitral disease; 9 died of acute carditis—characteristic of childhood; 1 died, without a valvular lesion, from a dilated heart and external pericardial adhesions at the age of 16.

There were 30 cases of malignant endocarditis. In 14 of the 30 cases there seemed to be a decided relation between the rheumatism and malignant endocarditis. From a study of this series it was apparent that arthritis, pericarditis, nodules and other manifestations of a rheumatic type, may occur during the final illness, and may actually be recovered from. In only 3 of the 350 cases was there no valvular lesions and death from myocardial failure. One was acute, the other 2 were chronic. Pleurisy and mediastinitis in a series of 100 cases were present in 50 per cent. Two cases demanded paracentesis. Congestion and basal edema, with brown induration in some cases was present in at least 38 out of 100 cases. There were two examples of acute edema of the lungs in 100 cases. Bronchopneumonia occurred in 12 per cent. of these cases. Infarctions were present in 11 per cent.; peritonitis in 5 cases; ascites occurred in 10. Thrombosis of branches of the portal vein occurred in one instance, and hemorrhages into the mucous membrane of the stomach also in one instance. Thrombosis of one or more of the large veins in the neck occurred in three cases.

35. **Carcinoma of Stomach.**—Sherren urges that every suspicious case should be considered surgically, and that cases of chronic gastric ulcer should be submitted to surgical treatment early. In this way the percentage of "cures" will be much improved and the incidence of the disease greatly lessened.

Bulletin de l'Académie de Médecine, Paris

October 13, LXXVIII, No. 31, pp. 147-162

45 *Surgery in the Field. (Chirurgie de guerre.) T. Tuffier.
46 *Conservative Surgery in the Field. (Conservation des membres dans les plaies des parties molles et les fractures diaphysaires.) L. Picqué.

45-46. Both these articles were summarized in the Paris Letter in THE JOURNAL, November 7, p. 1684.

Centralblatt für die Grenzgebiete der Med. und Chir., Jena

September, XVIII, No. 5, pp. 391-506. Last indexed Aug. 22, p. 712

47 *Diagnosis of Disease of the Kidney by the Roentgen Method. (Röntgendiagnostik der Nierenerkrankungen.) W. Altschul.
48 *Gonorrheal Arthritis. O. M. Chiari.
49 Etiology of Gastric Ulcer. R. Vogel.

47. **The Roentgen Method of Examining the Kidneys.**—Altschul gives an alphabetical list of 604 articles on this subject and compares the views of the different authors. He expatiates on the extreme importance of the Roentgen findings not only with calculi and displacement of the kidney but in hydronephrosis and pyonephrosis. The Roentgen method with a tumor or tuberculous process in the kidney is less instructive than other methods of clinical examination, as a rule. "A reliable Ronetgen picture of the kidney should show the edge of the psoas, the transverse processes of the vertebrae and the last rib. The edge of the psoas does not encroach on the kidney shadow in normal condition. Kidney calculi cast a shadow so that negative findings exclude a concrement with 97 per cent. certainty." Even in the apparently negative cases the concrement may show up if a silver salt is injected into the pelvis and then withdrawn. Enough of the silver salt clings to the concrement to render it visible then.

In case of positive findings the various sources of error must be excluded. He lists forty-eight possible sources of error, including fruit stones, gall-stones and concrements in the bowel or prostate, cheesy or calcareous processes, scars in the kidney, relics of bismuth in the bowel or of iodipin possibly decades after intramuscular injection, warts on the back, undissolved pills, salol, fragment of broken spinous process, calcified parasites in muscle tissue, hypernephroma, deposits of sulphur, etc.—he cites one or more clinical instances of each. Even the most expert are liable to draw mistaken conclusions at times, as when the opaque catheter passed smoothly along past a suspicious shadow in the ureter, and it proved to be a ureter stone lodged in a diverticulum. The diagnosis of kidney stones used to be made too lightly and too frequently.

48. **Gonorrheal Arthritis.**—Chiari reviews 470 articles published on this subject in the last ten years. Gonococci are seldom found in the effusion in the joint after the acute stage is past, except in the more malignant types with involvement of the myocardium. He tabulates 443 cases in which vaccine therapy was applied with autogenous or commercial vaccine. Only forty-two cases were uninfluenced; thirty-two patients were improved and 367 cured. In 16 cases antimeningococcus serum was used instead of a vaccine, and 13 of the patients were cured. Ramond reported in 1911 successful autoserotherapy in 5 severe suppurating cases; he injected several times from 1 to 5 c.c. of the fluid obtained by puncturing the joint. The injection was made subcutaneously near the joint in question. Maillet has reported similar experiences, as also Constantinescu with hydrarthrosis. The progress in the last decade has been such that we can count now on curing the arthritis with vaccine therapy and physical measures, especially stasis hyperemia and superheated air, or at least inducing marked improvement even in apparently desperate cases.

Deutsche medizinische Wochenschrift, Berlin

October 8, XL, No. 41, pp. 1833-1856

50 *Prevention and Treatment of Tetanus. (Indikationen für die serumtherapeutische Tetanusbekämpfung.) E. von Behring.
51 Experimental Syphilis of Rabbit Eye. (Primäraffekt und Keratitis parenchymatosa beim Kaninchen, bewirkt durch Reinkulturen von Syphilisspirochäten.) J. Schereschewsky.
52 Protective Ferments Not Found Specific. (Erfahrungen mit dem Abderhaldenschen Dialysierverfahren.) R. Otto and G. Blumenthal.
53 Negative Abderhalden Reaction Probably Excludes Pregnancy. (Die Abderhaldensche Schwangerschaftsreaktion.) A. Eder.
54 Vital Staining with Acid Stains. (Vitalfärbung mit sauren Farbstoffen und ihre Abhängigkeit vom Lösungszustand der Farbstoffe.) W. von Möllendorff.
55 Injury and Disease of the Eyes in the Field. (Augenerkrankungen im Kriege.) A. Groenouw.
56 *Work of the Dentist in the Field. (Aufgaben des Zahnarztes im Kriege.) W. Dieck.

October 15, No. 42, pp. 1857-1880

57 *Experimental Analysis and Theory of Anaphylactic and Apotoxic Intoxication. (Anaphylaktische und apotoxische Vergiftung.) E. von Behring.
58 Clinical Anthrax. (Zur Pathologie und Klinik des menschlichen Milzbrandes.) Mathias and Blohmke.
59 Actinomycosis. E. G. Dresel.
60 Hospital Trains. (Organisation der Lazarettzüge.) M. Christian.
61 Transportation and Care of the Wounded. (Versorgung unserer Verwundeten.) V. Czerny.

50. **Serotherapy of Tetanus.**—Behring calls attention to the fact that the symptoms of tetanus are the result of the action of the tetanus toxin on the central nervous system and especially on the motor ganglion cells. The tetanus toxin reaches the spinal cord only by way of the nerves, on account of its special affinity for nerve tissue. Research has demonstrated further that the toxin makes its way up the nerve tissue quite slowly. One consequence of this is that the longer the nerve tract, the longer the period before the characteristic symptoms develop. It takes five days in the horse, one or two days in the dog, thirteen to eighteen hours in guinea-pigs, and only eight to twelve hours in mice. The local focus should be excised and antitetanus serum be given to neutralize the still free toxin, and the passage of the toxin up through the nerve tissue interrupted by resection of the nerve. It is useless, he says, to amputate the whole limb when all that is needed is to make a gap in the nerve running to the focus of infection. His collaborator for twenty-five years, "H. S.," has on three occasions accidentally infected himself with tetanus by the breaking of a glass vessel. The third time (1902) the cramps of the shoulder, chin and eyelids and bad general symptoms following the breaking of a tetanus culture tube in his hand all subsided after the trunk nerves were exposed in the axilla and an injection of the strongest antitetanus toxin made into each. The tetanus was arrested and gradually retrogressed to complete recovery. The use of the arm was restricted for a time but was finally regained in full. In prophylaxis, Behring thinks that wounds with bad smelling secretions had better be treated with iodoform in coarse crystals while those of benign aspect should be irrigated with a 0.1 or 0.5 per cent. solution of iodin trichlorid. Preventive antitetanus serum may merely postpone the tetanus which may develop as soon as the effect of the serum has worn off. Consequently it may be well to make a second injection with an antitetanus serum designed to avoid danger of anaphylaxis.

56. **Dental Protheses for the Wounded.**—Dieck insists that the teeth of the soldiers should be put in good condition before they are sent to the front. All broken-off roots should be pulled even if they are not causing disturbance. The tissues around are seldom quite normal and although there is no trouble under ordinary conditions, chilling, wetting and trauma are liable to set up mischief in the old prongs at any moment. In fact he goes back of the reservist to the children, and emphasizes the necessity of systematic training and dentistry of the children in school as a vital factor in building up the health of the rising generation and reducing dental trouble in the land and sea forces. Dental protheses are of the greatest importance in case of wounds of the jaw, as fracture of the jaw is of more vital consequence, he declares, than fracture of any other bone, perhaps. The Japanese army was supplied with ready-made adjustable splints for fractured jaws, and they restored the functional use of the jaw.

57. **Blood Platelets Responsible for Anaphylactic Intoxication.**—Behring reviews here the intensive research in regard to anaphylaxis which has been conducted during the last four years at the institute at Marburg in his charge. The results confirm the assumption that the blood platelets are responsible for anaphylactic shock. Some disturbance in the medium or in themselves causes them to clump, and the consequence is obstruction of the smallest blood vessels with the clumped platelets. This in the brain brings on anaphylactic shock. It is more than a mere coincidence that all substances which induce anaphylactic shock in normal, nonsensitized guinea-pigs have a destructive action on the blood platelets, both in the test-tube and in the living body. The history of this view and the various data which have led up to it are analyzed and the practical result stated that he has succeeded in making an extremely powerful agglutinating substance out of the blood platelets; it is capable of coagulating a mixture of fibrinogen, etc., with one part to forty million parts of the mixture. He suggests that the platelets should more properly be called "thrombocytes."

Münchener medizinische Wochenschrift, Berlin

October 13, LXI, No. 41, pp. 2057-2088

62 Tachysystoly of the Auricle and Irregular Pulse. (Rhythmische Vorhoftachysystolie und Pulsus irregularis perpetuus.) H. E. Hering. Concluded in No. 42.
63 *Secondary Changes after Fracture of Semilunar and Scaphoid Bones. (Traumatische Malazie nach Frakturen des Os lunatum und Os naviculare carpi.) v. Gaza.
64 Successful Abortive Treatment of Syphilis Twice in Two Years. (Zweimalige Abortivheilung der Syphilis bei Reinfektion nach 2 Jahren.) E. Hoffmann.
65 Heart Block from Gunshot Wound of the Heart. (Herzblock und Herzschuss.) Koetzle.
66 *Prophylaxis of Epidemic Disease in the Field. (Bekämpfung der Kriegsseuchen im Felde.) Nocht. Concluded in No. 42.
67 *Prophylaxis of Tetanus in the Army. (Zur Vorbeugung des Starrkrampfes im Heere.) E. Jakobsthal.
68 Impressions of a Physician at the Front. (Kriegsbriefe aus der Kriegslazarettabteilung I. Bayr. Armeekorps.) Schloesser.
69 Setting Up a Field Hospital for the First Time. (Die erstmalige Einrichtung unseres Feldlazarettes.) H. Albrecht.
70 Bursting in Tissues of Regulation Bullet. (Explosiv-Geschoss ähnliche Wirkung der deutschen Infanterie-S-Munition bei Nahschuss.) M. Nippe.
71 Dental Protheses for Wounds of the Jaws. (Die zahnärztliche Therapie der Schussverletzungen der Kiefer.) C. Greve.

63. **Traumatic Softening After Fracture of the Semilunar Bone.**—Gaza has recently encountered two cases of this rare affection of the semilunar bone of the hand. In both the Roentgen rays threw the first light on the clinical picture. Comparison with similar cases on record shows that the so-called traumatic softening is in reality a fracture, generally in the middle of the crescent and it is shown up instructively by the Roentgen rays only when they are applied in the radio-ulnar direction. Patches of lighter shadows are seen as the result of destruction at the time of the fracture or of absorption or abnormal deposits of lime. Later the bone may develop serious secondary changes such as occur in spongy bones elsewhere, the tardy result of injury, as, for example, in traumatic coxa vara, in Kümmell's kyphosis of the spine, after fracture of the heel, and possibly after Köhler's affection of the scaphoid bone of the foot. There may be a latent period of months or years after this semilunar bone fracture, and then the joint may develop a severe secondary arthritis and the only means of relief be removal of bones in the wrist with eventual interposition of a flap of fat in the gap left in the set of carpal bones.

66. **Prophylaxis of Epidemic Disease.**—In the course of these general remarks Nocht emphasizes the danger of transmission of disease by flies, saying that typhoid and dysentery seem to have a special attraction for flies. The English noted in their southern Africa campaign that when men with typhoid and with other affections lay in the tents, the flies collected on the typhoid cases and left the others in peace. He tells the story of a guest at a North Sea health resort who complained to the hotel proprietor of the hosts of flies in the privies, and was told, "You had better plan to go to the privy during meal-hours as the flies are all in the dining-room then." Nocht states that lime has not proved effectual for sterilizing manure, and a 25 per cent. solution of commercial ferrous sulphate seems the best disinfectant for this purpose.

67. **Tetanus.**—Jackobsthal remarks that the greater prevalence of tetanus among the wounded now in comparison to previous compaigns may be due to the more conservative treatment and to the digging of and fighting from trenches. The tetanus does not attack always the most severely wounded but only those with ugly, jagged wounds. He urges prophylactic injection of antitetanus serum on the firing line in cases of such wounds or all wounds soiled with dirt. The supply of antitetanus serum in Germany will not permit this at present, and he insists that more should be made at as many points as possible. "Even small private laboratories can make a satisfactory antitetanus serum that will answer for prompt prophylaxis, and horses should be supplied them for the purpose." He adds that he found tetanus germs in three out of seven specimens of the Indian fibers, *pengawar djambi*, which are sometimes used for dressing wounds. He examined this substance bacteriologically after knowing of

two cases of tetanus that had developed in patients whose deep wounds had been staunched with these fibers.

Therapie der Gegenwart, Berlin

October, LV, No. 10, pp. 409-428

72 *Epidemic Diseases during Wartime. (Kriegsseuchen.) L. Dunner.
73 *Synthesis of a Nucleic Acid. (Emil Fischers Synthese einer Nucleinsäure.) G. Klemperer.

72. **War and Pestilence.**—This article is a summary of a series of five postgraduate lectures on the diseases liable to become epidemic during the war. Kirchner emphasized the danger now from the lack of the previously enforced international exchange of information as to appearance and spread of epidemic diseases in other countries. Now we have merely rumors instead of accurate information as to the points in which the danger threatens. While the wounded are sent back to the home zone as rapidly as transportation can be secured, soldiers with an epidemic disease should be kept on the spot and not be despatched to the rear or the home zone. Isolation shelters can be erected almost anywhere, and provision made nearby for a sterilizing plant. The disposal of the dead and of dead horses is a problem that has not yet been satisfactorily solved. He advises to wait before vaccinating against cholera until cases of the disease actually occur as the immunity conferred is of brief duration. "The production of antiplague serum is a difficult and dangerous matter as the horses have to be inoculated with living cultures, and several of the workers in this line at Petrograd have lost their lives at the work." He adds that antidysentery serum is ineffectual in certain forms of the disease.

73. **E. Fischer's Synthesis of a Nucleic Acid.**—Klemperer states that the year 1914 will be memorable in science on account of the announcement of E. Fischer at the July meeting of the Prussian Academy of Sciences that he had succeeded in synthetically producing cell-nucleus substance. It is in the form of a theophyllin-glucosid phosphoric acid which crystallizes readily and is apparently a uniform chemical entity. The process is extremely simple, namely, by the use of dry pyridin and phosphorus oxychlorid, as is described in detail, as also the various properties of the synthetic nuclein. Fisher remarked, "The successful research in this line opens the way for synthetic production of many substances more or less closely analogous to the natural nucleic acids. How will they act on the living organism? Will they be directly assimilated and used in building up the cell nucleus or will the living organism reject them or break them down before assimilating them? Experimental research alone can answer these questions. I am audacious enough to hope that under especially favorable circumstances the assimilation of artificial nucleic acids can proceed without the splitting of the molecule. This, however, must lead to profound changes in the organism, changes which possibly may resemble those permanent ones observed in natural conditions, which we designate as mutations." Klemperer remarks in conclusion that the cooperation of synthetic chemistry with experimental biology may lead to new therapeutic achievements, especially in the treatment of gout, just as the treatment of diabetes was placed on a sounder basis by the discoveries which resulted in the synthesis of carbohydrates.

Wiener klinische Wochenschrift, Vienna

October 8, XXVII, No. 41, pp. 1343-1362

74 Diathermia in Gynecologic Disease. J. Kowarschik and H. Keitler.
75 *Parotitis in Barracks. (Mumpsepidemie 1913-1914 in der Garnison Graz.) W. Kulka and A. Neumann.
76 Notifiable Diseases in Vienna. (Die anzeigepflichtigen Infektionskrankheiten Wiens in den Jahren 1901-1910.) S. Rosenfeld.

75. **Mumps in a Garrison.**—Kulka and Neumann state that 293 of the 317 cases last year in the barracks at Graz were in one regiment while only a few scattered cases developed among the other troops although in close contact with them. Droplet infection is incriminated and convincing instances are related to prove this and also that direct transmission and the entire period of incubation can be comprised in twenty-four hours. In several cases, after an interval of from fifteen to seventy-five days, there was a new attack of the mumps or relapse. Orchitis developed in only 13 per cent.

Zentralblatt für Chirurgie, Leipsic

October 3, XLI, No. 40, pp. 1537-1560

77 *Pain on Pulling Right Spermatic Cord as Sign of Appendicitis. C. ten Horn.
78 *Resection of Stomach. F. Neugebauer.

October 10, No. 41, pp. 1561-1584

79 *Presternal Dislocation of the Clavicle. W. Danielsen.
80 Amputation of the Foot in the Field. (Ausführung der osteoplastischen Amputatio supramalleolaris im Kriege.) W. Levy.

October 17, No. 42, pp. 1585-1608

81 *Symptoms and Treatment of Fractured Patella. Haeberlin.

77. **Diagnosis of Appendicitis.**—Ten Horn found in twelve of the fifteen cases of appendicitis that traction on the right spermatic cord, seized just above the testicle, caused sharp pain. Pulling on the cord evidently drags on the parietal peritoneum at the internal inguinal ring and if there is inflammation this causes pain. The cremaster reflex is not to be relied on as a sign of appendicitis.

78. **Resection of the Stomach.**—Neugebauer expatiates on the advantages of Reichel's method of suturing the stomach directly to the jejunum after circular resection. He has applied the method in twenty cases with constant satisfaction, but instead of trying to join the entire cut surface of the stomach to the jejunum he sutures the upper two-thirds to close the stomach like a bag, and joins merely the lower third of the stomach stump to the jejunum. The stomach thus forms a wide bag tapering toward the wide opening in the bottom directly into the jejunum. By this method it is possible to resect even quite high ulcers on the lesser curvature, and yet have a broad enough base to the bag to join to the jejunum with an ample outlet for the stomach, as he shows in an illustration.

79. **Permanent Cure of Presternal Dislocation of the Clavicle.**—Danielsen quotes authorities to confirm his own experience that this form of luxation is easily diagnosed and reduced but that it is extremely difficult to keep it reduced, and pain and disturbed function inevitably follow. He declares that the principle of the usual method of correction by drawing back the shoulder is wrong. The shoulder should be drawn forward, not back. He applied this principle in a recent case with prompt and permanent cure of the trouble. To hold the shoulder in this forward position he lifted the arm and bandaged it so that the upper arm lay against the cheek, the forearm on top of the head.

81. **Diagnosis and Treatment of Fracture of the Patella.**—Haeberlin's experience in a recent case confirms in every respect the importance of Dreyer's sign of intact muscle apparatus with fracture of the patella. (It was described in THE JOURNAL, July 11, 1914, p. 206.) By excluding the action of the quadriceps by applying extension to the thigh, we can see at once whether the muscle is lacerated along with the patella. In the case reported the patella was fractured in falling from a wagon and the gap was almost one and a half fingerbreadths. The man was unable to extend his leg or raise it when passively stretched, even after an extension bandage had been applied to the thigh, thus confirming the assumption that the muscular apparatus had been torn across also. The operation revealed that this was the case in fact, but rapid recovery followed under extension and Kausch suspension.

Zentralblatt für Gynäkologie, Leipsic

October 3, XXXVIII, No. 40, pp. 1281-1304

82 *Gynecology and Obstetrics in Tropical Africa. (Frauenärztliches aus Deutsch-Ostafrika.) L. Deppe.

October 10, No. 41, pp. 1305-1320

83 Tent Dilatation. (Zur Anwendung und Erleichterung der Laminariadilatation.) A. Calmann.
84 *Asthenia-Enteroptosis. K. F. L. Kaiser.

October 17, No. 42, pp. 1321-1344

85 Anatomy and Pathology of the Menstruation Cycle. R. Schroder.
86 The Stem Pessary. (Zur Frage der Intrauterinstifte.) A. Goenner.

82. **Gynecology and Obstetrics in Tropical Africa.**—Deppe's district has the reputation of being one of the unhealthiest on the east coast; he found malaria parasites in the blood in 44.2 per cent. of 988 healthy natives examined last February. The total mortality among the 19,629 whites for this period was 2.4 per cent., namely, men, 2.8; women, 1.6, and children, 2.6 per cent. Of this total mortality 50.2 per cent. was due to tropical diseases. He comments on the importance of capable, healthy white women for the welfare of a tropical colony, as on them usually depends the efficiency of measures to protect against infected mosquitoes, contaminated drinking water and improper food and clothing. Sex does not seem to affect the liability to malaria, and evidence is accumulating that this applies also to climatic influences. Pregnancy seems to be carried a little past term, as a rule; labor is short and delivery easy, but Deppe's experience has been that an obstetric case requires closer supervision in the tropics than elsewhere. The fetal membranes rupture early and the unfavorable conditions in the tropics in regard to radiation of heat are liable to render the nervous system unstable. The physical cause should be sought; this may be the hyperemia of the abdominal organs, which is physiologic for the tropics. In conclusion he reiterates the importance of regular exercise for both men and women as this alone keeps the body at par in the tropics as well as elsewhere.

84. **Asthenia-Enteroptosis.**—Kaiser gives a historical review of the varying conceptions in regard to whether the viscera are suspended by their supports, "like clothes in a wardrobe," or whether "the ligaments merely determine their relative position while the abdominal pressure bears their weight" or whether they rest on organs and tissues below as on a cushion and would stay in place even if all their ligaments were severed. The surgeons and internists are still disputing on the subject, Rovsing pointing to his successful operations to suspend the organs better, while Faber claims that asthenia-enteroptosis should be combated by general internal medicine. Kaiser's view is that the internal conception is nearer the truth, but as it so seldom is systematically applied to bear fruit, surgical measures are more practical and are usually successful. In some cases there is undoubtedly a disproportion between an unusually large abdominal cavity and unusually small viscera. The heaviest viscera sink down the lowest, he adds, citing Mann's case in which the liver contained an abnormally high proportion of iron, and had sagged exceptionally low.

Zentralblatt für innere Medizin, Leipsic

October 17, XXXV, No. 42, pp. 937-952

87 War and Pestilence. (Verhütung und Bekämpfung von Kriegsseuchen.) P. Schmidt.

Gazzetta degli Ospedali e delle Cliniche, Milan

October 1, XXXV, No. 113, pp. 1233-1248

88 The Lipoid Substances of the Leukocyte Granules Seem to Be Phosphacids and Ethers. (Ricerche istochimiche sulle sostanze lipoidi degli elementi morfologici del sangue.) B. Nicola.

October 8, No. 115, pp. 1265-1280

89 Chronic Disease of Lymph Glands in the Neck. (Sul trattamento delle adeniti croniche cervicali.) A. de Castro.

October 11, No. 116, pp. 1281-1296

90 Sclerosis of Corpus Callosum of Gonorrheal Origin. C. Ortali.

Pediatria, Naples

October, XXII, No. 10, pp. 721-800

91 *Chloroma in Girl of Six. (Contributo clinico ed anatomo-patologico allo studio del cloroma.) G. di Cristina.

92 *Connection of Chronic Hydrocephalus with Inherited Syphilis. S. Cannata.

93 Lactose Content of Human Milk. (Concentrazione del lattosio nel latte di donna.) E. Palmegiani.

94 *Splenic Anemia in Children. (Etiologia e patogenesi dell'anemia splenica nell'infanzia.) G. Caronia.

91. **Chloroma in a Child.**—Di Cristina's little patient died the fifth month after the first sign of trouble, a tumor in the right orbit. Severe pains in the bones soon followed and necropsy showed that all the blood-producing organs had been involved in the pathologic process. The mother was tuberculous and the child gave a positive Wassermann reaction but there was no response to tentative specific treatment and there was nothing else to suggest syphilis in the child or family so that the reaction was most probably non-specific in this case. The blood findings resembled those of acute leukemia.

92. **Chronic Hydrocephalus and Inherited Syphilis.**—Cannata obtained a positive Wassermann reaction in only 10 of the 19 infants with chronic hydrocephalus he encountered last year, but application of the test to the parents gave positive results in 16 of the mothers and in 4 of the 10 fathers tested. One child and its mother gave a negative reaction but the father responded positively. In an additional group of 3 cases of chronic hydrocephalus the test was not applied as the parents were unmistakably syphilitic. These findings justify prompt treatment for inherited syphilis in every case of chronic hydrocephalus without waiting for the assumption of syphilis to be confirmed.

94. **Splenic Anemia in Children.**—Caronia has applied the Wassermann test systematically to the parents of the 30 children with splenic anemia in his service during the last twelve months. He obtained a positive response in 19 cases. The syphilis in the family was accompanied by tuberculosis in 9 cases; in 2 there was tuberculosis in the family without detectable syphilis. His experience confirms the assumption that still other causes may bring on splenic anemia in children. Chief among these probably is sepsis with a chronic course.

Policlinico, Rome

August 30, XXI, No. 35, pp. 1249-1280

95 *Restoration of Earning Capacity after Crippling Injuries. (Adattamento funzionale degli arti traumatizzati e loro valutazione.) S. Diez. Commenced in No. 33.

September 6, No. 36, pp. 1281-1312

96 Mental Disturbances after Injury of Frontal Lobes. G. Borsari.

September 13, No. 37, pp. 1313-1344

97 Diagnosis of Tumors in Corpora Quadrigemina. V. Bianchi.

98 Phlebitis in Undulant Fever. (Flebite nella febbre mediterranea.) P. N. Martelli.

September 20, No. 38, pp. 1345-1376

99 Diathermia. G. Pampiglione.

100 *Dilatation of Uterine Cervix in Treatment of Dysmenorrhea and Sterility. (Valore dell'operazione Bossi.) A. Zekete.

101 Necessity for Municipal Institutions for Treating Industrial Diseases and Injuries. A. Ranelletti.

September 27, No. 39, pp. 1377-1408

102 *Foci of Inherited Syphilis in the Province of Rome. R. Campana.

103 Salvarsan in Malignant Syphilis. R. Sacco.

October 4, No. 40, pp. 1409-1440

104 Nerve Grafting for Paralysis of the Larynx. (Trapianti nervosi nella paralisi dei nervi del laringe.) G. Serafini and O. Uffreduzzi.

105 Meat Poisoning and Paratyphoid. (Di alcune infezion alimentari specifiche.) T. Pontano.

106 Prophylaxis of Transmissible Diseases. (Profilassi delle malattie infettive.) U. Mariotti. Commenced in No. 18.

October 11, No. 41, pp. 1441-1472

107 Intermittent Cerebral Claudication. (Una varieta di claudicazione intermittente cerebrale.) G. Bianchi.

108 Abscesses in the Neck of Otitic Origin. G. Bilancioni.

October 18, No. 42, pp. 1473-1504

109 Behavior of Cerebrospinal Fluid in Acute Nephritis in Children. L. M. Spolverini.

95. **Workmen's Compensation.**—Diez is medical inspector of all the Italian railroads and has extensive experience with accidents among the employees and determining the pensions for disability. He reviews the various systems in vogue for this in different countries and discusses in particular the best means for stimulating a crippled workman to make the most of what functional capacity he has left. When he is assured of an indemnity proportional to the injury, he is interested in exaggerating his crippled condition instead of trying to overcome it. Diez expatiates on the necessity for institutions to train the crippled to overcome their handicap. Resumption of work is in itself, he says, a powerful aid in the cure for the majority of industrial accidents while loafing aggravates the functional weakness and increases the psychic incapacity

for work. He thinks the best plan is an indemnity for two or three years on a declining scale, to be forfeited unless the workman makes every effort to improve his functional capacity under proper training. The man knows that at the end of this period he will be left without income from this source, and hence he will have every inducement to become self-supporting in the interim. Unforeseen complications or errors in diagnosis may call for revision, but otherwise this plan—which is already working well in Switzerland for traumatic neuroses—seems very promising, he thinks.

100. **Dilatation of Uterine Cervix for Dysmenorrhea and Sterility.**—Zekete writes from Budapest to laud the fine results to be obtained by systematic mechanical dilatation in cases of stenosis, deformity or obstruction from any cause of the lumen of the uterine cervix. In eighteen cases the women had never conceived and menstruation was more or less painful. In six of the cases the mucosa showed signs of chronic inflammation or hypert- phy. The mucosa was curetted and touched with tincture of iodin and the intracervical stem pessary introduced and held in place by packing with gauze which was changed each day, inspecting each time to see that the instrument was in place. The patient stays in bed for eight days and continues to wear the endouterine pessary for twenty days in all. It was removed and cleansed two or three times and never caused the least disturbance of any kind. In the 20 cases treated for dysmenorrhea, complete success was realized in 16, the cervix becoming of normal size and shape and no longer opposing any obstacle to the menstrual flow, and in the others the former extremely severe dysmenorrhea has been very much improved. This systematic method of treatment corrects infantile conditions and anteflexion or both. In some cases the dysmenorrhea did not develop until after marriage.

102. **Foci of Inherited Syphilis in Rome Province.**—Campana states that in his expeditions into the rural districts to help in rooting out malaria he has frequently had groups of children brought to him for treatment of malaria who showed unmistakable signs of inherited syphilis. The promiscuous family habits and the custom of hiring out as wet-nurses have contributed to the spread of syphilis in the province. He cites a number of typical cases to emphasize the differential points and urges the necessity for specific treatment in addition to the treatment for malaria. He found signs of incipient myocarditis quite pronounced in a number, and the teeth were exceptionally fragile and malshaped even when they were not of the typical Hutchinson shape.

Tumori, Rome

July-August, IV, No. 1, pp. 1-128

110 *Etiology of Goiter, Cretinism and Deafmutism. (Gozzismo.) B. Grassi.
111 Tumors in Fish. (I tumori nei pesci.) V. Ronca.
112 Chronic Inflammation and Non-Malignant Tumors of the Breast. (Flogosi croniche e tumori benigni della mammella.) A. Cimorono. Continued.

110. **Endemic Goiterism.**—This is a free translation of Grassi's term *gozzismo* by which he designates the syndrome affecting persons in certain districts, the chief seat of the trouble being apparently in the thyroid gland, and the manifestations running a wide range of morbid conditions, chief among which are goiter, cretinism and deafmutism. He reviews the various theories in regard to the etiology, summing up his own view in the statement that there is no conclusive evidence to date that incriminates infection, contagion nor the drinking water. There may be multiple causes at work, he thinks, inadequate nourishment and ventilation, much contaminated waters and damp and dark houses. He lists the literature on the subject that has appeared in the last ten years.

Brazil-Medico, Rio de Janeiro

September 15, XXVIII, No. 35, pp. 333-340

113 Triatoma Transmitting Chagas' Disease. (Presença em uma localidade do Estado do Rio de um novo transmissor da molestia de Chagas encontrado infectado em condiçoes naturaes.) A. Neiva.

September 22, No. 36, pp. 341-348

114 Mycosis of the Lungs. (Oidium pulmoneum, n. sp.) O. Magalhães.
115 Abnormal Number of Aortic Valves. (Caso de anomalia numerica das valvulas sigmoideas da aorta.) O. Freire.

Russky Vrach, Petrograd

May 30, XIII, No. 20, pp. 705-740

116 *Phonoauscultation. D. D. Pletneff.
117 *Elimination of Iodin by Healthy and Diseased Kidneys. A. K. Sivert and S. Kaminsky.
118 Influence of Cholesterin on the Resisting Power of the Red Blood-Corpuscles. A. Z. Bilina and G. P. Chosroieff. Commenced in No. 19.

June 6, No. 21, pp. 741-772

119 *Preliminary Ligation of the Inferior Thyroid Artery for Strumectomy. N. N. Petroff.
120 The Pathology of the Will. S. A. Sukhanoff.
121 Present Status of Treatment of Tuberculosis. M. S. Kamneff.
122 *Tubercle Bacilli in the Blood in the Initial Stage of Tuberculosis and in the Healthy. I. N. Lopatin.
123 *Salvarsan in Treatment of Surgical Syphilis. G. A. Ivashenzoff and V. A. Lange. Commenced in No. 20.

116. **Phonoauscultation.**—Pletneff applies this term to auscultation with a tuning-fork and stethoscope or phonendoscope. The tuning-fork is placed over the organ to be examined, and its vibrations are listened to through a stethoscope or phonendoscope placed on the same organ. The tuning-fork is gradually moved along from the neighboring organs to the one to be examined, and when it reaches the latter an increased and louder resonance is perceived. With this method the stomach boundaries can be easily differentiated from those of the intestines, the boundaries of the lungs can easily be determined, also foci of infiltration in the lungs. Pleuritic effusions, etc., change the resonance. It can be used not only to outline different organs but also to distinguish diseased conditions in them.

117. **Elimination of Iodin by Healthy and Diseased Kidneys.**—Sivert and Kaminsky report that six healthy persons were examined and it was found that healthy people rapidly eliminate iodin, the average proportion being 77.9 per cent. of the total amount during the first twenty-four hours. During the second twenty-four hours the amount of iodin eliminated is from 15.5 to 19.6 per cent. of the dose taken, while during the next twenty-four hours the elimination of iodin stops altogether. Only about 5 or 6 per cent. of iodin remains in the body, or is eliminated by other organs. The elimination does not seem to depend on the amount of urine voided. In the patients with pathologic kidneys examined there were 5 with acute and 2 with chronic parenchymatous nephritis, and 4 with chronic interstitial nephritis. In parenchymatous nephritis the elimination of iodin by the kidneys is rapid and complete, the average proportion being 81.9 per cent. of the amount taken. Of this amount 70 per cent. is eliminated during the first twenty-four hours. No difference was noted in this respect between acute and chronic parenchymatous nephritis which thus resemble healthy kidneys in regard to the amount of iodin eliminated. In 4 cases of chronic interstitial nephritis the amount of eliminated iodin is markedly decreased, being 17 per cent. instead of the normal 70 or 80 per cent. The duration of the iodin elimination is considerably prolonged, sometimes for five or six days. The test dose was in all cases 1 gm. of potassium iodid given after a meal. The authors think that the nature of the renal trouble can thus be determined from the proportion of iodin eliminated. If this is below 70 per cent. it indicates an interstitial process.

119. **Ligation of the Inferior Thyroid Artery for Strumectomy.**—Petroff warmly recommends De Quervain's method of ligating the inferior thyroid artery before operating on the thyroid gland. This renders the subsequent course of the operation comparatively bloodless. Petroff used this method on fourteen patients in one year—all under local anesthesia plus epinephrin. Ten minutes was sufficient to find and ligate the inferior thyroid artery. Once he was unable to locate it. The strumectomy was done when the upper thyroid was also ligated. The inferior artery is ligated only on one side, as bilateral ligation might endanger the nutrition of the parathyroids. Complete recovery was the rule in from six to thirteen days.

122. **Tubercle Bacilli in the Blood in Incipient Tuberculosis.**—Lopatin found tubercle bacilli in the blood of only 6 of 26 patients in the initial stage of tuberculosis or only suspected of this, but there were numerous acid-proof bacilliform formations that could be easily mistaken for real tubercle bacilli. Positive results from inoculation of guinea-pigs were obtained in 9 cases out of 16 that showed signs of initial tuberculosis. Of 10 patients that did not show clinical signs of tuberculosis, only in 2 cases could tuberculosis be demonstrated in the guinea-pigs. This method is reliable provided the tissues of the animals show characteristic changes. Bacillemia thus occurs in about 60 per cent. of patients in the initial stage of tuberculosis.

123. **Salvarsan in Surgical Syphilitic Lesions.**—Ivashenzoff and Lange treated with salvarsan and neosalvarsan sixty patients with gummatous syphilis of nose, throat, pharynx, larynx, skull (2 cases), tibia, penis, sternum, joints (tabes), syphilitic osteomyelitis or periostitis. The doses for salvarsan were 0.5 to 0.6 gm. for weekly intravenous injections, followed sometimes the next day by an intramuscular injection of 0.4 to 0.5 gm. The dose for neosalvarsan was 0.75 to 0.9 gm. Sometimes the patients felt much improved from one to two injections, especially with lesions of the nasopharynx or larynx. The voice that for years had been lost would clear up, and the breathing become free, rendering the use of the tracheotomy tube superfluous. The success in the treatment of nasal lesions was so striking in some cases that rhinoplastic operations could be postponed and rendered more efficacious as the tissues became stronger and more vital. The same excellent results were obtained in the rest of the above mentioned lesions. Complications are liable but with the proper technic and dosage they are comparatively rare.

Hospitalstidende, Copenhagen

October 7, LVII, No. 40, pp. 1225-1248

124 *Operative Treatment from Without of Intralaryngeal Cancer; Thirty-Three Cases. (Resultaterne af den operative Behandling —Laryngofissur—af den intralaryngeale Cancer.) E. Schmiegelow.

125 *Operative Treatment of Diffuse Lipomas of the Neck. (Et opereret Tilfælde af Madelungs Fedthals.) E. Gjessing.

124. **Intralaryngeal Cancer.**—Schmiegelow's report on sixty-six operative cases of cancer of the larynx was presented at the Clinical Congress of Surgeons held at London last July. He emphasizes that in by far the largest proportion of cases the cancer started in the vocal cords, and that cancer of this origin is more readily and completely eradicated while it induces hoarseness almost from the start and is thus detected early. The growth besides is unusually slow. An exception to the grave prognosis with other forms of cancer of the larynx is the pedunculated adenocarcinoma growing from the superior aditus laryngis. In his total 66 laryngeal cancer cases, 5 were removed through the mouth but 4 succumbed to recurrence, 10 died from recurrence without an attempt at operation, and 8 died in the 8 cases treated by means of tracheotomy and also in the 1 case treated by subhyoid pharyngotomy, 4 by partial resection and in all but 1 of the 9 treated by total resection. In the 33 cases in which the cancer was removed by thyrotomy, 18 of the patients were cured; 5 succumbed to pneumonia and 10 to recurrence. The interval after the operation has been from ten to eighteen years in 4 cases; from three to nine years in 9 cases and two years in the others. Two of the patients died from a cancer in rectum or stomach eight and eighteen years after the operation and at the necropsy the larynx was found clinically normal. He compares these results with those reported by Semon (24 cases), Chiari (29) and Thomsen (10)—a total of 96 cases of thyrotomy technic applied to laryngeal cancer, with 61 surviving for more than a year, that is, over 63 per cent.; 9 did not long survive the operation and 25 succumbed to recurrence.

125. **Operative Treatment of Symmetrical Lipomas of the Neck.**—Gjessing's patient was a man of 50, healthy until he became addicted to liquor a few years ago. Treatment for a gastric ulcer has been required recently. The lipomatosis had been developing for sixteen years. The huge lipoma encircling the entire neck was excised at two sittings, with an eighteen-day interval, and although there was some suppuration from the wound at first the results were excellent. Removal of the lipomas is a comparatively tedious procedure but the mortality is zero. In some cases on record the cure was permanent; in others there was great relief for a long time although there was recurrence later.

Hygiea, Stockholm

LXXVI, No. 18, pp. 1009-1072

126 *Treatment of Exophthalmic Goiter. (Till frågen om behandlingen av morbus Basedow och särskilt om indikationerna för operationer å glandula thyreoidea vid denna sjukdom.) K. Petren.

127 Measles in Infants; Thirty-Three Cases. (Mässling hos späda barn.) A. Lichtenstein.

128 Muscular Work from Heat and Energy Standpoint. (Om muskelarbetet från termodynamisk synpunkt.) O. Ottosson.

126. **Treatment of Exophthalmic Goiter.**—Petren discusses in particular what indications in exophthalmic goiter call for surgical treatment and comes to the conclusion that the cardiac symptoms are the criterion for this. None of the other cardinal symptoms is constant enough to base the indications on it. But the almost delirious heart action is a futile waste of energy and a source of permanent injury. The palpitation and the rest of the excessive action of the heart lead to a compensating hypertrophy and dilatation, and may finally wear out the heart from the overstimulation of the sympathetic from the hyperthyroidism. As this is the most serious element of the Basedow clinical picture, in his opinion, he bases on it the decision whether to operate or not. When the heart is already enlarged and does not subside under medical treatment or the heart symptoms show no marked improvement, an operation should be undertaken. It may also be indicated if the mental or moral nature is changed. In the majority of cases the disease is mild and subsides more or less completely under medical measures. The patient should be kept systematically in bed. The latest reports on serum treatment, especially with milk from thyroidectomized goats, have not been encouraging, but Petren himself has had occasional good results from it. He has also obtained good results from carbonated baths and electricity to the nerves in the neck. The carbonated baths had an unmistakable soothing effect on the rapid heart action. Hot and cold baths might aggravate conditions.

Ugeskrift for Læger, Copenhagen

October 1, LXXVI, No. 40, pp. 1721-1766

129 *Potassium Iodid Test for Carbon Monoxid in the Blood. (Metode til Paavisning af Kulilte i Bloder.) K. Sand.

130 Average Food Ration in Denmark. (Danske Familiers Forbrug af de enkelte Födemidler.) M. V. Bjorum and P. Heiberg.

129. **Detection of Carbon Monoxid in the Blood.**—Sand states that when halogens are added to blood the oxyhemoglobin is transformed instantaneously into methemoglobin, and the color changes with this from red to brown. When the blood is under the influence of carbon monoxid, the hemoglobin resists the halogen and there is no change in tint. His various experiments have shown that in the form of a solution of 1 part iodin and 2 parts potassium iodid to 300 parts distilled water this inhibiting phenomenon occurs with special force. He utilizes this to detect and estimate any proportion of carbon monoxid in the blood. The iodid solution is added to a set of test-tubes containing each 10 c.c. of normal or the suspected blood, until in the control tubes all the oxyhemoglobin has been completely transformed into methemoglobin, as evidenced both by the tint and spectroscope. The same number of drops is then added to the corresponding tubes of the suspected blood. The reaction occurs down to a content of 0.25 per cent. carbon monoxid and below; 0.125 per cent. seems to be the limit. The best results were obtained with the blood diluted to 2 or 3 per cent. He says that the color reaction occurs earlier and is more distinct than with other technics, and it is four times as sensitive, revealing as little as 5 per cent. carbon monoxid content. When the blood is at a temperature of 20 C. the reaction occurs instantaneously. This technic permits also spectroscopic control with the same specimen of blood.